

THE South African MINING JOURNAL

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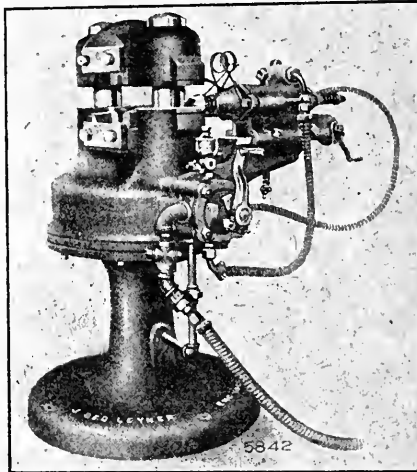
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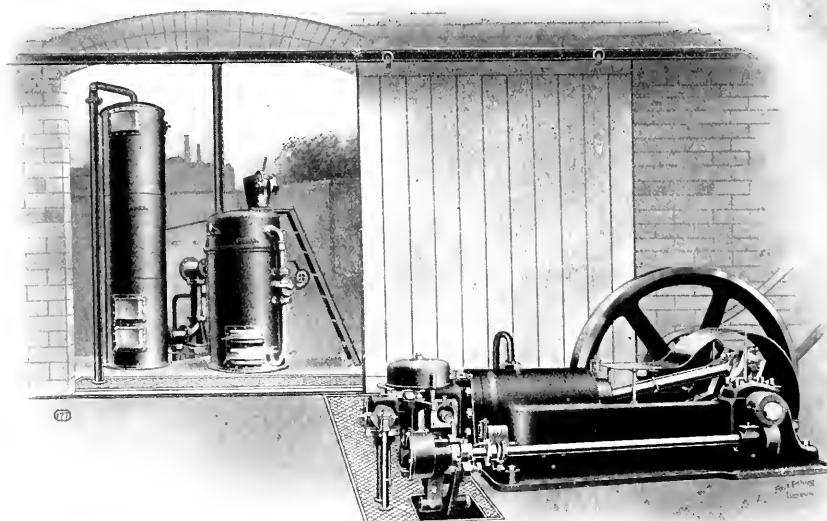
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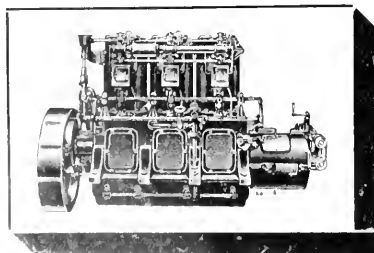
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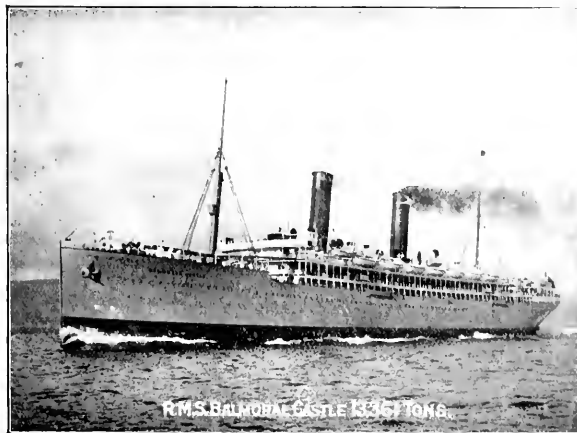
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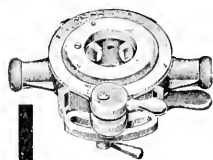
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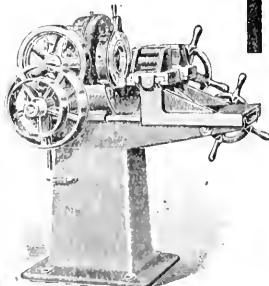
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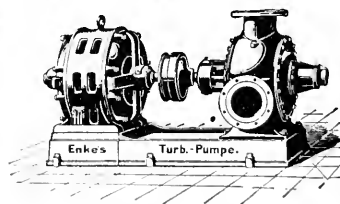
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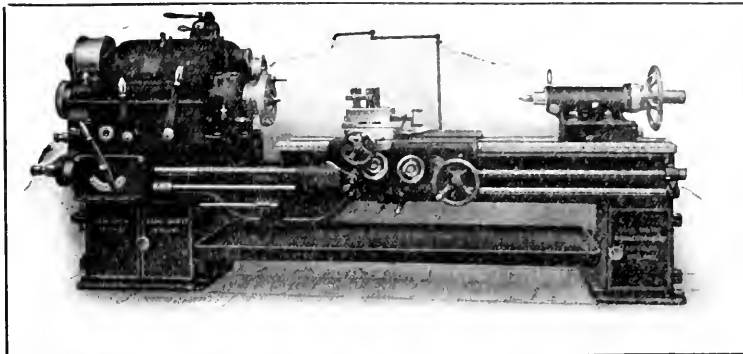
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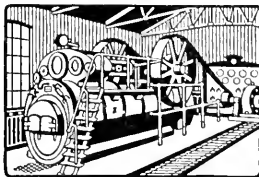
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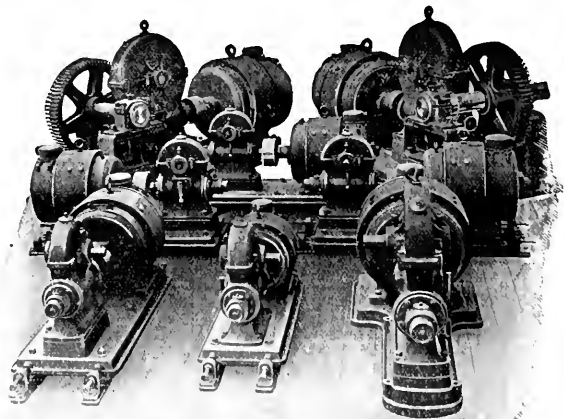


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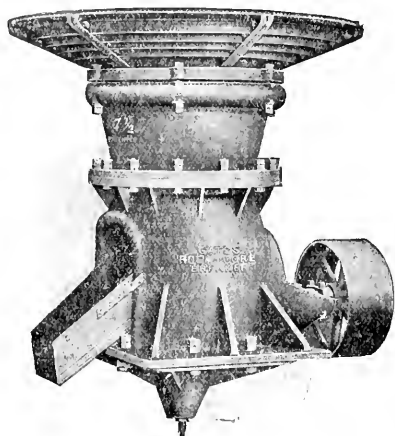
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Notes and News.

The election of Mr. John Munro to the presidentship of the Chamber of Mines will be hailed with great satisfaction by all mining men on the Rand. In addition to being the respected and popular local representative of Barnato interests, Mr. Munro is a director of the Premier Diamond Mining Company and has been on the executive of the Chamber of Mines for many years. The other officers of the Chamber for the year are: Messrs. H. C. Boyd and D. Christopherson, vice-presidents. Executive Committee: The President, Messrs. M. G. Elkan, Julius Jeppe, S. C. Black, H. C. Boyd, Geo. Nathan, D. Christopherson, W. Dalrymple, W. H. Dawe, P. Ross Frames, G. W. Higgins, J. H. Crosby, Louis Marks, E. J. Renaud, R. W. Schumacher, and W. L. Honnold.

* * * *

The daily papers have printed the very lengthy and interesting speech made by Mr. Wagner, describing the circumstances surrounding his resignation from the Board of the Premier Diamond Mining Company, Ltd. We have no intention of taking sides in the quarrel that appears to have arisen out of Mr. Wagner's misunderstanding with Messrs. Barnato Bros., and Mr. Wagner himself no doubt would be the last to expect support from us in his domestic differences with his brother directors. The results won by the Premier Company last year have already been reviewed in these columns, and a summary of the proceedings at the annual meeting will be found elsewhere in this issue.

* * * *

With reference to recent advertisements by certain parties regarding the effect in the United States, and possibly elsewhere, of a decision given in the former territory on vacuum filters, Messrs. Bell and Nixon are advised that the situation in the Transvaal is dominated by the Thompson master patents, No. 1910 of 1899, and No. 175 of 1901, and that parties wishing to manufacture, sell, purchase, or use filters of the swinging or submerged types, or pressure leaf filters of the totally enclosed type, should obtain a licence under the above patents.

* * * *

We regret that by an oversight in our last issue in writing of the Van Ryn Deep we stated that early in March last the shares of this company were quoted at 7s. A printer's error in a back list of quotations was responsible for the mistake. The correct figure should have been 17s., and the calculations in regard to market valuation accordingly should be revised on this basis.

* * * *

A certain amount of prospecting has recently been proceeding in the Piet Retief district and on the farm Cofdiefont No. 40 a gold reef which possesses some promising characteristics has been opened up. Mr. J. G. Louw is the prospector who has done the principal amount of work in this area and in consequence of recent discoveries he has been awarded 47 claims.

* * * *

The name of a member of the staff of this paper has been prominently identified in the London papers with the newly-floated Consolidated Oil Fields of South Africa, Ltd. It should be distinctly understood that the views of the engineer in question were given in his private capacity and were embodied in a report written many years ago. While we yield to no one in our desire to see the oil possibilities of this country thoroughly tested, we are inclined to agree with the critics that the financial methods of this particular company have not been above reproach, such as, for instance, the blatant "puffs" that have appeared in papers like *John Bull*.

Consolidated Oil Fields.

The publication in the *Government Gazette* of the terms under which a further extensive block of State-owned ground is to be leased appears elsewhere in this issue and is commented upon at length in our editorial columns.

No doubt the proposals will be given very thorough consideration in influential quarters during the next few months. It is only a matter of a year or two and the Rand will be in receipt of a huge augmentation of output and profit through these Government gold mining areas on the Further East Rand. We make special reference in this section of the paper to ground leased by the Government on terms such as have been agreed on between the Government and the Johannesburg Consolidated Investment Company in regard to Modderfontein, not only because the announcement in the *Gazette* constitutes the principle local mining feature of the week but also because the tenders for the Brakpan-Schapevrust lease were due to be in yesterday and furthermore the present seems a fitting time to direct attention to the facilities existing in the Further East Rand area for co-operative working. In the latest lease notice provision is made for proposals such as may eventuate from the successful tenderer desiring to amalgamate with adjacent ground. A brief survey of a map of the Further East Rand will suffice to convince one that the conditions advantageous to joint or co-operative working there are as great, if not greater, than in the Central section of these gold fields. Some few months ago it was said by a leading engineer on the eve of his departure from Johannesburg that few additional shafts would be sunk to intersect the auriferous conglomerates in depth and we anticipate that the exploitation of the southern portion of the Further East Rand area will assist in demonstrating the practicability of this view.

* * * *

The subject of the treatment of "excess development" under the provisions of the Mining Taxation Act occupied the attention of the Chamber of Mines considerably during 1912, says the annual report of that body. In February a memorandum was submitted to the Government, recommending an amendment to the Act, to the effect that three years' development ahead of milling requirements be allowed in all cases as a minimum before any excess development be taken into account. No amendment to the Act was made during the Parliamentary Session of 1912. Subsequent to the termination of the Session various meetings were held between representatives of the Chamber and the Commissioner of Inland Revenue, for the purpose of determining the correct interpretation to be placed upon the term "excess development." In December last the Chamber submitted a memorandum to the Government, summarising the history of the case, and making certain recommendations for the method of dealing with "excess development" under the Act on those points still undetermined as a result of the Chamber's interviews with the Commissioner for Inland Revenue. At the end of the year these matters were still under the consideration of the Government.

* * * *

The equipment of the Falcon Mine, in the Blinkwater District of Southern Rhodesia, is expected to arrive on the property in March next.

The Falcon Mine.

The capacity will be 15,000 tons per month. It is reported that ore has been struck on the sixth level, giving a value of over £7 per ton, the full width of the reef not yet having been encountered. Evidently the Falcon is opening up in a satisfactory manner, and it looks as if good returns will be secured.

* * * *

At the end of 1911 two applications, to which the Chamber of Mines had lodged opposition, were still "sub judice." Both applications were, however, abandoned. During last year 104 specifications were reported upon by the Patents Committee of the Chamber of Mines. In 76 of these cases it was decided that no action should be taken by the Chamber, but with regard to the remaining 28 specifications, opposition was entered. In 3

cases the oppositions were withdrawn; in 1 case the application was unsuccessful; in 8 cases the applications were abandoned; in 11 cases the applicants amended their specifications to meet the objections of the Chamber; whilst 5 of the cases were outstanding at December 31st, 1912.

* * * *

Last week Sir Joseph Robinson used the most effective means open to an ordinary citizen to protect his name from gross defamation. The magistrate sentenced the defendant in the action for "criminal libel" to the extreme

period of imprisonment allowed by the law—six months with hard labour. An appeal has been noted, so that it is undesirable to review this case in detail; but Sir Joseph's action provokes South African journalists to some necessary comment on a general issue. On the whole our Press has been remarkably free from libellous insinuations and malicious slander. "Remarkably," because the rapid creation of fortunes in the early days of diamond and gold mining has naturally left much bitterness and envy in the hearts of some who have been outwitted or left behind in the struggle. The general latitude of morals of the "early days" leaves much room for the broken survivor of that time to draw on his invention for a "good current lie, forging the endorsement as well as the bill." But whenever the judicial mind has been invoked to the investigation of these "easily proved" revelations nothing has been discovered except malice and perjury. Blackmail has had no success; yet it has had notorious issue. Barnato's over-active brain gave way under the torture. Wolff Joel met his death in the attempt to lay "von Veltheim" by the heels, before Mr. Justice Phillimore struck that blackmail once for all with the two-handed sword of Justice. Sir Joseph Robinson's vigorous manhood and abiding readiness for a rough-and-tumble protected him from this sort until threescore-and-ten years of hard living and a father's instinct to leave an honourable name to his boys seemed to make him an easier target. His immense wealth and even his title made the essay seem not harder but easier. Why take a risk when what was precious was but a breath, and the cost of silence so trifling a part of the pile? Fortunately for our South African reputation, Joseph Robinson is built of sterner stuff. He has silenced calumny by offering it the freedom of the witness box. Nor will the hint heard last week—to the effect that title and wealth might affect the finding in the Court of a Rand magistrate—provoke anything but indignation; for Sir Joseph Robinson has had the sweeping vindication of an English Court too. In the English case the felon has now no appeal. Of the case heard last week nothing can yet be said except that the defence has not produced one tittle of evidence to substantiate the charges, nor has it ventured to cross-examine Sir Joseph or the officers holding the Court records which we were told would incriminate him. "The accused," said the magistrate, "had not attempted to defend himself in any way, and he was guilty under the common law of libel." He added that "the accused had borrowed money some years ago from the complainant and now he bit him." Who will not agree with Mr. Esselen's declaration: "Luckily, by this slander Sir Joseph Robinson has no need to say that he has been left poorer, but richer, as he has proved these vile lies to be without foundation"? And the slander thus met vindicates not only the name of the man who has had the courage to allow the world to review his youth in a mining camp, but shows the rottenness of similar "reminiscences" about others of our countrymen.

* * * *

A new colliery enterprise has been established on the Newcastle coalfield. The venture is called the Fairleigh Company, which has a capital of £15,000, and has taken over the assets of the concern known as the Crown Colliery.

The workings are a mile from the centre of Newcastle, and the company claims to produce the best coal found in the district. The plant has been overhauled and brought up-to-date, and during the last three months, in the progress of developments, a new seam has been located a quarter of a

mile from the old head-gear. The present company was floated last July, and a large share of the capital has been subscribed locally. The mine was formally opened this week, when Mr. Osborne, the Chairman, spoke in glowing terms of the prospects of the undertaking. Two new shafts have been constructed, and extensive development work is expected both on the surface and below, plenty of labour being available. The company have appointed agents throughout South Africa and on the Continent, and the Chairman stated that there was every reason to hope for a substantial dividend. Newcastle is delighted with the revival of work, which, since the Crown Colliery ceased operations, has been at a standstill.

* * * *

The excellent handbook of farms available for white occupation, issued by the Transvaal Landowners' Association, provides an object lesson **Transvaal Landowners' Enterprise.** that the Government might well take to heart. The Third Edition of the Handbook issued by the Association, is drafted on identical lines to the former editions, and it is published with the object of bringing to the notice of farmers land which is available for white occupation and the channels through which particulars may be obtained, inspection arranged and communication established with the owners. By means of the information it provides, land, which would appear likely to meet the required conditions, in the desired district, can be selected, particulars obtained, and the owner applied to for terms. Armed with this information, the applicant will have some confidence in incurring the expense of inspection. The majority of the farms owned by members of the Association and referred to in the Handbook are situated in the more Northern Districts of the Transvaal, in the so-called middle veld and bush veld areas. During the past two years there has been a considerable influx of Europeans into these districts, and there is every indication that this will continue, and probably increase, now that confidence has been established in the ability of the Government to control, if not to eradicate East Coast fever in this Province. The districts in question are specially recommended for cattle raising and dairying, and, in addition, many farms are well adapted for the production of maize, and, where water is conserved, for lucerne and ostrich farming, for tobacco and for citrus fruit. As far as possible information concerning any particular district, or any general information which is required, will be given on application to the owner or the energetic Secretary of the Association, Mr. H. A. Baily. It is the wish and policy of the members of the Association to promote in every way in their power the beneficial occupation of the country by a desirable white population, and no effort will be spared in assisting a genuine applicant, with the necessary experience and means, to find a farm which he can occupy and develop with benefit to himself.

* * * *

In reply to Mr. Mentz (Zoutpansberg), in the Assembly this week, the Minister of Mines said he was **The Truth about Bellevue Tins.** informed that the first prospectus in relation to the Bellevue Tins, Ltd., which was to have been registered as a public company, was registered in the office of the Registrar of Companies on November 19, 1911. The prospectus was subsequently withdrawn, and another company, with practically the same objects, was registered on March 19, 1912, under an identical name, as a private company. The present prospectus of the private company was, it was understood, marked "private and confidential," and as such was not a prospectus within the legal meaning of the expression. As regarded the value of the property from a mineral point of view, at a recent inspection by the Inspector of Mines no signs of tin or of typical tin-bearing rock were to be seen in the piles of samples or dumps. At the time of the same inspection it was found that no work had been done for a considerable period, and access could not have been obtained to the shaft. As regarded the number of persons employed at the date of the inspection, there was apparently one white man and one umfaan, but the former was absent. The statements regarding the non-existence of tin go to confirm numerous statements of the same kind which have reached us from private sources at various times. The latter, indeed, go further in their expressions of condemnation.

TOPICS OF THE WEEK.

CHAMBER OF MINES' ANNUAL MEETING

MR. M. G. ELKAN brought his very successful period of office as President of the Chamber of Mines to a close on Thursday with an address of unusual interest and importance. The address is sufficiently voluminous to fill half an issue of this journal, and our readers must be content with a summary and indication from us of its leading points. A dozen articles might more easily be written than one on the matters discussed by Mr. Elkan, and their very number and variety afford an excellent illustration of the innumerable ways in which the mining industry affects the well-being of the country. The speech was enriched with many exclusive and first-hand statistics; with some statesmanlike opinions on the outstanding problems of the industry, and with several valuable practical suggestions, of which more is certain to be heard. Naturally the President of the Chamber is in a position to collect and publish the most striking and informative statistics regarding the industry, and some of these may be here strung together from various portions of his address. Thus it is most satisfactory to learn that the death-rate for native employees fell from 34.04 per thousand per annum in 1911 to 28.83 in 1912. In 1912, 247,477 natives were supplied by the Witwatersrand Native Labour Association and independent recruiters, and "the native labour position is more satisfactory than it has been for many years." Stores consumed by the mines in 1912 were valued at £9,753,751. European salaries called for £7,865,939 and native wages £5,691,401. Rockdrills have increased in number from 2,425 in 1908 to 5,530 last year. The recovery per ton milled has increased from 27s. 11d., in 1911, to 29s., an improvement of 1s. 1d. per ton. This is not due to closer sorting, which has remained practically stationary, the figures being 13.01 per cent. for 1911 and 12.5 per cent. for 1912, but to an improvement in the grade. There has been a welcome reduction in the death-rate from accidents as affecting white employees, the figure being 2.17 per thousand last year as against 3.57 in 1911. An improvement in the average profit per ton milled is shown, having risen from 9s. 7d. in 1911 to 10s. in 1912. This is due, to some extent, to better methods of extraction, according to Mr. Elkan, but principally to the improvement in the value of the ore treated, and is most encouraging for the future. Of the total output 65 per cent. was absorbed by working costs, 21 per cent. by dividends, and 14 per cent. by Profits Tax, capital expenditure, interest on and redemption of loans. Mr. Elkan drew attention to the gratifying fact that the average value of the residues to-day does not exceed 1s. 6d. per ton. In regard to native labour, while the mines had on the 31st December, 1911, 65.76 per cent. of their total complement of native labour, this figure had risen at the end of 1912 to 84.62 per cent. It must be remembered that during last year the complement figures were revised, as in the course of time it had been found that, owing to the introduction of labour-saving appliances, better organisation and greater efficiency, it was possible to perform the work with a smaller number of natives. The health of the natives is having constant and careful attention, and that the efforts are proving successful is clearly seen from the death-rate figures, which have come down from 34.04 per thousand per annum in 1911, to 28.83 in 1912; these rates include, of course, the deaths due to accidents, which amounted to 4.59 in 1912, so that the death-rate from disease alone last year was 24.24. These figures further include the mortality among the so-called tropical natives, which in 1911, taking into account deaths from accidents, was 72.59, and from disease alone 67.55; in 1912 they decreased to 54.55 and 49.34 respectively, while in January of this year the total death-rate among such tropical natives had fallen to 47.76 per thousand per annum.

So much for the chief statistics quoted by Mr. Elkan. To students of the industry, each set of the figures given is eloquent of progress. As the official spokesman of the industry the President of the Chamber, in his views, doubtless expresses the considered opinions of our most thoughtful mining leaders. His gratitude to the Minister of Mines for

his sympathetic interest and his repudiation of all party political bias on behalf of the Chamber may be taken as a graceful tribute to the obvious. The increase of working costs during the year Mr. Elkan sets down to the same causes as stated by Mr. Warriner at the annual meeting of the Mine Managers' Association. Having reviewed the progress of labour-saving appliances underground, laying emphasis on the attention being paid to detachable bits and drill-sharpening by machine, Mr. Elkan opined that further improvements were still to come. He paid deserved tribute to the success of filter process of slime treatment, and to the Nissen stamp. Into his remarks on coming diamond legislation it is difficult to read anything very illuminating in regard to the purport of the draft Bill, but one is glad to note that Mr. Elkan shares the view of this paper that in regard to diamond-cutting, it is better to suspend judgment till we have all the evidence before us. It is to be hoped that the plea put in on behalf of the further rebate of 1s. per ton on coal for export will not continue to fall on deaf ears. Other matters on which Mr. Elkan made out a good case for early and whole-hearted action on the part of the Government included the provision of more railway rolling stock; an additional supply for the Rand Water Board, and legislation in regard to bewaarplaatsen, already recommended by the Transvaal Commission. The address also embraced another lucid and convincing exposition of the case for the W.N.L.A. in regard to the deferred pay question—a question which Mr. Chaplin, in the House of Assembly has also been busy elucidating during the week. Indeed, native labour formed the theme of much of Mr. Elkan's remarks, but his chief points are covered by the statistics already quoted. The growth of the big electric power schemes on the Rand, and the excellent values lately obtained from many of the deepest mine workings on the Reef, gave Mr. Elkan further cause for congratulation. Phthisis, of course, bulked largely in his review; but he is full of confidence in the success of the present campaign. The appalling number of changes among the men on the mines leading to inefficiency and loss in every sphere of labour, white and black, did not escape comment, and arising out of this he propounded the idea of reducing the number of white men employed underground, and replacing the native surface workers by white men. The proposal is not wholly novel. Mr. Cullen in our columns advocated it months ago, and nothing seems to stand in the way of its adoption but the inclusion of the term white man in certain regulations dealing with underground work. That the term is unconstitutional is very possible; it is certainly inconsistent and illogical. Mr. Elkan's proposal undoubtedly merits serious consideration. His closing summary of the position is as follows:—"A scrutiny of the position of the gold mining industry cannot fail to leave the impression of great inherent soundness and strength upon every impartial investigator"—"a concise, moderate and convincing conclusion with which no one can quarrel."

RAND MINE MANAGERIAL PROBLEMS.

If the President of the Mine Managers' Association has the misfortune to compete with other chairmen and heads of organisations in reviewing the outstanding features of last year, he has, at least, the satisfaction of getting his say in first. Thus Mr. R. C. Warriner, in his valedictory address delivered at the annual meeting of the Mine Managers' Association last week, was able to anticipate much of what we may expect to hear from those chairmen connected with the mining industry who are wont to indulge in general remarks and reflections at their annual meetings. We print a full report of Mr. Warriner's address elsewhere, and it will be noticed that though the field covered is wide and the questions discussed are many, a businesslike conciseness marks the whole speech that leaves no word of it unnecessary. Some of his remarks, of course, were devoted to chronicling certain outstanding events of the year,

familiar to all who have followed the course of the industry in the period. Thus it is enough to note his satisfaction at the increased spirit of co-operation among the mines, the most valuable fruit of which is the Native Recruiting Corporation. In regard to phthisis also, Mr. Warriner contented himself with recording the excellent progress that had been witnessed in the year towards the eradication of the evil, and the co-operation of all concerned that had secured the good result. Labour questions mainly occupied Mr. Warriner's attention, and on such subjects as native rates of pay, the passing of the experienced white miners, and the disappointing results of white apprenticeship schemes, he naturally speaks with exceptional authority. The result of his strong remarks on the present system of remunerating the native will doubtless be drastic reform on the lines indicated in his speech. The present system is unfair and unscientific, putting a premium on inefficiency and half-heartedness. No doubt, any proposal to alter the mode of paying natives on the mines is regarded as fraught with such far-reaching consequences that no step in that connection may be taken without the consent of all the interests involved. Admitting all this, however, it would seem that nothing but the time and trouble necessary to secure that consent were required. Mr. Warriner's views on the passing of the experienced miner are only too strongly confirmed from end to end of the reef; and his warning to the youth of the country and to those who are responsible for their chances of becoming good miners will, no doubt, produce good fruit. A notable feature of Mr. Warriner's address was his appeal to certain of the mine inspectors to enlist the support of the mine managers in securing the recognition of the multitudinous new regulations affecting the industry. Plainly a little more tact might have been exercised in certain cases, and these were no doubt in Mr. Warriner's mind when he spoke. No one will quarrel with Mr. Warriner for defending the mine managers from the constant charges levelled at them as the causes of the deplorable frequency of changes among the men on the mines. The men are notoriously only too prone to take advantage of the big and easily accessible market for their labour to give their managers the "go-bye" on the slightest pretext. Mr. Warriner stated the case for the managers with moderation, and it is noteworthy that both Mr. Schumacher and Mr. Elkan expressed similar views on Thursday. From the purely economic point of view his explanation of the fact that working costs on the mines of the Witwatersrand show an increase for the year of 8d. per ton milled over those for 1911, and 1s. 2d. over those for 1910 will be read with much interest. Various factors have contributed to this increase, among which he enumerated the amount now being spent all along the reef in water service for the allaying of dust, contributions towards miners' phthisis insurance fund and the establishment of the eight hour day underground as the principal. He mentioned in this connection also the steady increase in native recruiting fees and wages up to the beginning of October, when the Native Recruiting Corporation came into existence. "During the current year we can," added Mr. Warriner, "I hope, look forward to an improvement in this direction, if the leaders of the industry, the engineers and the mine managers will continue to work together in matters of general welfare." In weighing the net result of the year, as indicated in Mr. Warriner's review, there can be no hesitation in writing it down as most satisfactory. Progress has undoubtedly been made by the industry, but it is not a progress to be measured in small economies or shillings saved. Healthier workers, less dangerous mining conditions, a surer knowledge of the capabilities of the native worker, and the dawn of an era of enlightened co-operation among employers for the general good—these are some of the keystones of the year's progress. His successful guidance and leadership of the Mine Managers' Association during so momentous a twelve-month has added new laurels to the record of the general manager of the Crown Mines; and his successor, Mr. A. E. Payne will doubtless find that the position has not lost in dignity and importance during Mr. Warriner's tenure of office.

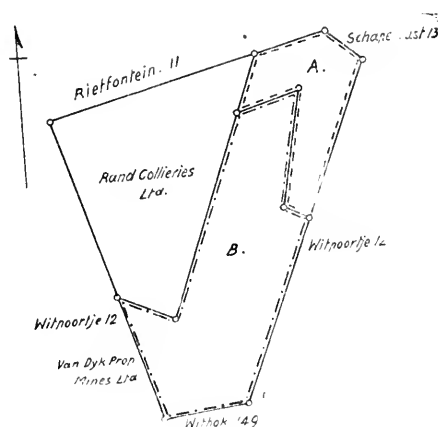
ANOTHER STATE MINES SCHEME.

Government Proposals in Regard to Witpoortje—A 1,180 Claim Property—Estimated Capital Required, £720,000—At Least 100,000 Shares to be Offered to the Public—Royalty Stipulation the Same as in the Case of the Brakpan-Schapenrust Lease.

THE event of the week in mining circles has been the publication in the *Union Government Gazette* of notice that the Government is prepared to receive applications for the lease of the exclusive right to mine precious metals on an area of about 1,180 claims consisting of a portion of the farm Witpoortje No. 12 in the Boksburg District. The area to be contained in this new State mine is denoted on the accompanying plan. The whole of the area bounded by the line bordered by dashes is to be leased. The freehold owner of the property is the Rand Collieries, Ltd. The northern portion marked A on the sketch plan, which is equivalent to 304 claims, is to be leased in terms of sections 51 and 52 of the Gold Law. The southern portion B is the area to be leased in terms of section 46 and is equal to 876 claims. The terms of the lease in regard to the Government's share of profits apply equally to each area and the demarcations referred to above will be of no material consequence to the successful tenderer. Revenue from the proposition will, however, be appropriated according to the Act.

BOUNDARIES OF THE PROPERTY.

It will be seen from the map that on the north-east side the property is bounded by a portion of the farm Schapenrust 13, on the east by that portion of the farm Witpoortje



12, belonging to the South African Land and Exploration Co., Ltd., on the south by Witpoortje 149, on the west by that portion of Witpoortje No. 12 belonging to the Van Dyk Proprietary Mines and by the property of the Rand Collieries, Ltd. In the Government notice the bounding areas of the property are stated as follows: The area is bounded on the north by the farm Rietfontein No. 11, on the east by the portion of Witpoortje No. 12, belonging to the South African Land and Exploration Company, Limited, on the south by the farm Witpoortje No. 149; and on the west by the portion of Witpoortje No. 12, belonging to the Van Dyk Proprietary Mines, Ltd. It will be observed that no mention is here made of the property of the Rand Collieries, Ltd.—rather a curious omission. The full terms of the lease will be found in the advertising columns of this journal.

CAPITAL EXPENDITURE.

It is estimated that, provided no unforeseen difficulties arise, and the ground is worked as an entirely independent proposition, a sum of at least four hundred thousand pounds

(£400,000) sterling will be required for shaft sinking and preliminary development, and a further sum of at least three hundred and twenty thousand pounds (£320,000) sterling for bringing the property to the full producing stage. In the case of the Brakpan State Mines lease the property of which adjoins the area now under consideration immediately to the north-east, it was estimated that—in the case of the Government Areas lease on Modderfontein—about £1,200,000 would be required to bring the property to the full producing stage if the lease is worked as a separate undertaking. It will be clear then that the new lease area is expected to be brought to the "full producing stage" for a substantially less outlay on capital account than in the case of the Brakpan or Modderfontein leases. Examination of a map of this section of the Witwatersrand shows that the 1,000 ft. contour cuts right across the new lease ground—almost through its centre—whereas in the Brakpan lease by far the greater proportion of reef-bearing ground lies at a depth of over 4,000 feet. Naturally, this must mean a distinct advantage for the new lease in so far as shaft sinking is concerned—an advantage which might be furthered by co-operation with workings already existing in adjacent ground. This whole area indeed seems to lend itself admirably to money-saving schemes through taking advantages of shafts already sunk. It will here be of interest to contrast the salient figures as to area and capital and guarantees required, etc., of the Brakpan-Schapenrust and Witpoortje leases. They are as follows:—

	Brakpan-Schapenrust Lease.	Witpoortje Lease.
Area (claims)	2,235	1,180
Required for shaft sinking and Development	£650,000	£400,000
Additional cost required to bring property to full producing stage	550,000	320,000
Total amount required	1,200,000	720,000
Bankers' guarantees required	65,000	10,000
Minimum shares to be offered for public subscription	150,000	100,000

On a per claim basis the advantage in regard to capital outlay lies with the Brakpan-Schapenrust lease, which also, perhaps, has greater prospective attractions of profit on account of its situation with regard to adjacent mines.

QUESTION OF ROYALTY.

The stipulation with regard to minimum royalty to be paid to the lessor, apart from such additional royalty as may be offered by the successful tenderer is, however, the same in the case of the Witpoortje lease as in that of the Brakpan lease. A detailed schedule, covering almost every unit rise in the percentage ratio of profit to recovery, has been prepared, and from this it will be seen that the somewhat simple basis of calculation which was laid down in the case of Modderfontein has been modified to some extent in the present instance. The old rate of advance is maintained up to the stage where the profit amounts to 30 per cent. of the value recovered, that is to say, that up to this point the minimum royalty bears the same ratio to the net profit as the latter bears to the value of the precious metals produced. Thenceforward, however, the Government share of the profits increases at a sensibly lower rate than in the previous lease, and no longer bears the same ratio to profit as before. When the latter is equal to 40 per cent. of the recovery, for instance, the Government share is 37.50 per cent. of the profit, and when the latter amounts to 50 per cent. of the product the share is 42 per cent.; a clear gain of 8 per cent. on the earlier scheme. The progression of the royalty does

not end at the 50 per cent. profit stage, however, but continues as far as the 60 per cent. level, at which point the ratio between the share of the lessor and the lessee is as 45 to 55. The ratio from this point onwards remains the same. An examination of the scheduled figures will show that the royalty rate increases steadily up to the 30 per cent. stage; it then diminishes gradually to the 60 per cent. limit. Between 30 and 31 per cent., for example, while profits increase by 1 per cent., the royalty advances by only 0.97 per cent.; and between 59 and 60 per cent., for one unit rise in the profits the royalty rate expands by as little as 0.25 per cent.

It is curious to notice that the position of the Government, on this basis, at the stage when profits are equal to exactly half the value of the gold recovered is approximately that of the Government Areas (Modderfontein) at the same stage on the basis of the arrangement entered into when their tender was accepted for the Modderfontein ground. That is to say, the royalty is equal to about 40 per cent. of the profit. Of course, over and above this maximum

royalty there is to come such additional percentage as the successful tenderer for the Witpoortje lease may be prepared to offer. It is evident that those who propose to put in application have a wider margin than was available in the case of the Modderfontein lease. In fact, if the Government are offered just so much as will bring their share to the level of the minimum tax laid down in the published conditions of the Modderfontein area, a very fair distribution of the profits will have been tendered. The latest scheme outlined by the Mines Department and the Treasury is an indication that a more generous view is taken of the risks run by those persons who provide capital for undertakings of this kind. The notice provides for conditions in case the applicant does not propose to form a new company but contemplates immediate amalgamation with adjoining ground. The proposal altogether appears to be an attractive one and its practical consummation will mark yet another vastly important development in the exploitation of that vast annexe of the Witwatersrand which lies to the east of Boksburg.

PROGRESS OF THE PILGRIMS REST DISTRICT.

A Review of the Position of Many Small Producers.

[FROM A CORRESPONDENT.]

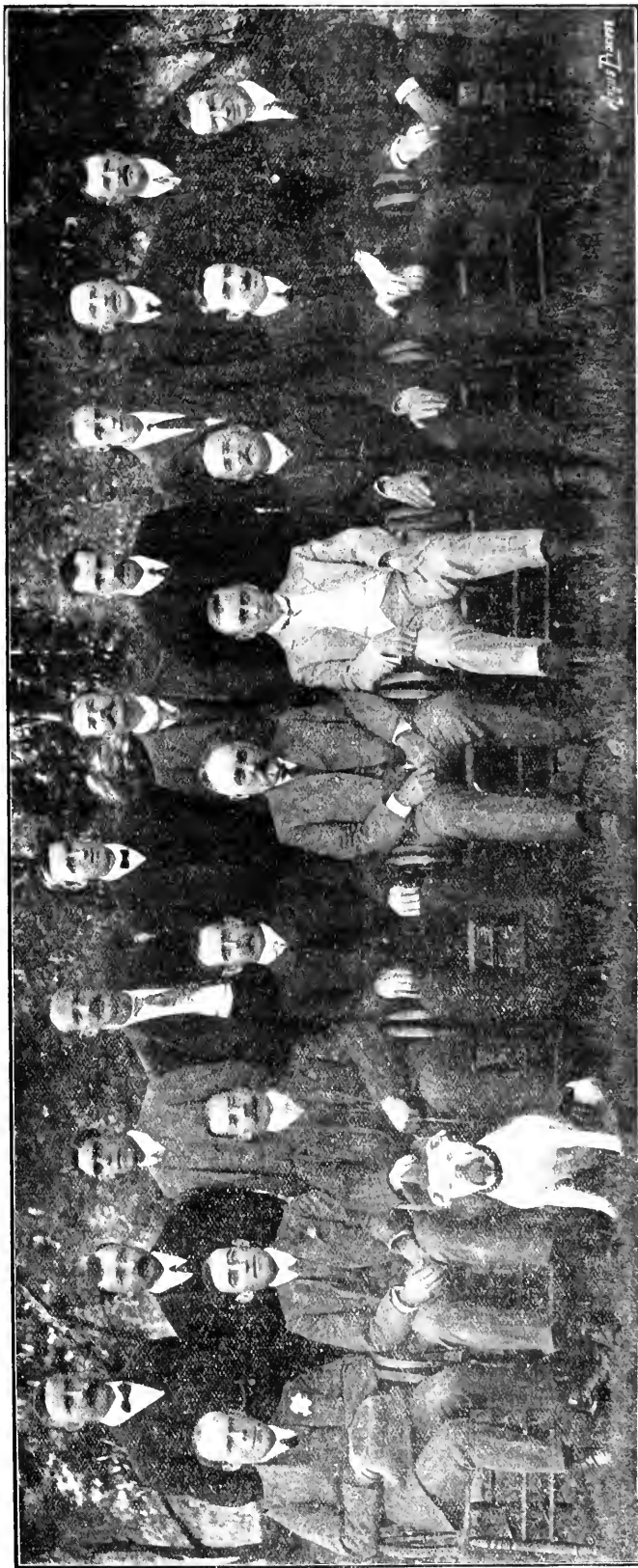
PROGRESS is still the keynote of the Pilgrims Rest district. The Desire property still remains, since its reversion to the T.G.M.E., unworked; but will, no doubt, soon be called in to add its quota to the grand total of the Central Mines. This will, no doubt, be when the Morgenson Concession lapses in a few months, every effort now being directed towards getting as much gold as possible from this area by the time the concession lapses. Across the creek we have the Welcome G.M. Co., which, after a run of several months, during which the output steadily declined, shut down for development. There is, it is thought generally, quite a good little proposition here, if economically worked, but to work it as it was run in the initial stages would spell ruin. Under Mr. Hutchinson, however, who had the care of the Desire while under tribute, the adjoining claims, there is every prospect of success, when the necessary capital is forthcoming to start milling operations again, if the present development results are maintained. Next in order comes the Pilgrims Creek G.M. Co., and here we have a tough proposition. Twice in the history of these claims the battery has had to close down after a run of a few months. Across the creek we hear the battery of the Little Octopus pounding away merrily, with every hope of a good life. Under the late control no real headway could be made and capital was being exhausted. This has now been remedied and a further five stamps are to be erected shortly. The Shale Reefs are those of the R. Burnham Syndicate, a property of note, while Theta has been located, but whether this has proved payable it is difficult to ascertain. But the Little Octopus, given a continued good control and management has a future. Adjoining comes a recent development, the Norcar, owned by Messrs. Norton and Carter. As the property is in the development stage it is difficult, not having been through the mine, to pronounce an opinion, but the erection of batteries and plant on so little development seems premature. Over the hill the R. Burnham Syndicate are plying along steadily. Though off the rich patch of some six months ago, the outputs are still satisfactory, and owing to the excellent and economical working of the property, which is an object lesson as to how small properties should be developed; the partners get excellent returns for their capital and labour. These gentlemen, Messrs. Munro and Burnham, having acquired interests in the C.B.M. Syndicate at Ledophine, are likely to remain in the forefront of

Pilgrims Rest mining life for very many years. The Wanderers Syndicate at Stanley Bush are still going strong, though there is a rumour of a loss lately, but I imagine this is only a passing phase in the life of the mine. The Mac Mac Syndicate have had increased outputs of late and have every evidence of a long and prosperous life. They have an excellent man in charge of affairs, in the person of Mr. Williams, who knows the district from A to Z. The Mali Dyke S.E. Africa, Ltd., will begin milling operations, I think, within a few months. Water and timber here are the only factors that can hamper successful effort. Of the many prospecting propositions of the Graskop and Pilgrims Creek area it is difficult to write, for one does not wish to predict too much or too little, but there are quite a number of likely openings that are worth looking at by anyone with capital. Over Frankfort way we find Mr. Macer at Black Hills putting up an excellent plant which will prove an object lesson to the district. This property should be an asset, for the erection of the plant follows on a long and patient development on right lines. Down this way there is quite a number of propositions in the development stage that may join the productive mines but of which it is unwise to venture an opinion without inside knowledge. One knows several, however, quite worth a little capital expended. Towards Sabie, below the berg, Rietfontein (T.C.L.) have prospects now that their cyanide troubles are over. The Sunlight Mine, which is in the same strike, I fancy, is troubled with reduction worries. These settled, and the railway in Graskop, so that transport will be materially reduced, this mine should go ahead. But with transport at from 3s. 6d. to 5s. per 100 lbs. it is difficult to reduce working costs. Speaking generally, though things are terribly quiet as a whole, there is every reason to feel that the predictions of the optimists are in every way justified.

Manicaland Mineral Output.

The mineral output of the Territory of the Companhia de Mocambique (Manicaland), for the month of January, 1913, was as follows:—Gold, reef, mill: gold won (fine gold) 402 ozs., 14 dwts., 9 grs.; tons crushed, 1,389; value, £1,691 6s. 5d.; concentrates (estimated), gold (fine gold), 20 ozs., 6 dwts., 6 grs.; tons, 7; value, £86 11s. 10d.; silver and lead value, £49 8s. 0d.

THE MANAGER AND STAFF OF THE JUMPERS GOLD MINE.



Front Row:—S. R. Evans, Assayer; S. H. Richards, Mine Captain; C. H. Cox, Reduction Officer; J. F. Wilkins, Mine Captain; S. Richards, General Manager; F. Fleischer, Resident Secretary; G. Whitcombe, Resident Engineer; E. F. Howe, Storekeeper; E. J. Perkins, Compound Manager.

Second Row:—J. F. Chalmer, Shift Boss; W. Bute, Shift Boss; S. Higginson, Sampler; J. Henning, Battery Foreman; J. F. Jewell, Foreman Fitter; A. Black, Foreman Smith; S. Robinson, Foreman Fitter; H. W. Lee, Cyanide Foreman; C. Wilson, Tinkeeper; F. Cowse, Hospital Attendant.

THE GEOLOGY OF THE WESTERN RAND.

An Important and Valuable Paper—The Solution of Some Very Old Problems—Faulting System of the Western Witwatersrand—Economic Aspect of the Work of the Geological Survey.

At the last monthly meeting of the Geological Society of South Africa, Dr. E. T. Mellor, of the Geological Survey, read a paper upon the results of his mapping of the west and south-west Witwatersrand. Previous contributions to the transactions of the same Society, and reports in the annual publications of the Geological Survey have dealt with the lower Witwatersrand system in the central portions of the Rand, but the latest paper, while it extends our knowledge of the lower horizons of the system beyond Roodepoort and Krugersdorp as far as they disappear below the rocks of the Transvaal system (Dol. & Bk. R.) to the south-west, discusses broadly those geological problems which have rendered that area one of the most difficult of any in this part of the Transvaal. Ever since the early days of the Rand the region between Roodepoort and Krugersdorp and beyond has presented many allurements to the capitalist, the engineer and the prospector, and many thousands have been spent in the endeavour to locate extensions of the Main Reef series in various parts of that country. Vast claim areas are still held in the hope of obtaining this object. The information obtained by Dr. Mellor, as the result of many months of painstaking labour has thrown much light upon the geological situation in those parts, and he has, by means of the maps and drawings which were displayed at the meeting referred to, given his solution of the many problems involved in a simple, clear, and, we think, thoroughly convincing way. In saying this we take the opportunity of adding our congratulations to those of the prominent geologists and engineers who listened to Dr. Mellor last Monday evening, and whose admiration of his work was well expressed in a few words by Mr. A. L. Hall, the President of the Geological Society, and by Dr. Corstorphine, the principal of the School of Mines. There is much to be added, of course, to the framework supplied by Dr. Mellor, but the essential facts relating to the structure of the western Witwatersrand have been elucidated, and the detailed work which remains will be helped and directed to useful and reliable results by means of what has so far been accomplished by him.

THE FAULT SYSTEM.

The key to the problems of the western Witwatersrand area is to be found in an accurate knowledge of the system of faulting which is responsible in that part of the country, even more than in the central Witwatersrand, for a great deal of complicated and puzzling stratigraphy. On the accompanying sketch map, which shows broadly the main features of Dr. Mellor's more intricate mapping, the main lines of faulting and their consequences are prominently exhibited. It is impossible to do justice to so important and extensive a work as that under review within the limits that are available in this issue, and it must suffice, therefore, upon this occasion, to discuss the outstanding features of the map, leaving for later issues the consideration of what is involved in the acceptance of Dr. Mellor's general statements. The faults which are of prime importance, as will be seen from a glance at the sketch map, are the Rietfontein fault which continues its course in a north-westerly direction from Witpoortje, as explained in a previous paper by the same author, and is found running north of Krugersdorp just south of the high ridge upon which a shallow basin of Government Reef (G.R.) strata is to be seen, a little to the east of the main road from Krugersdorp to Sterkfontein and Kromdraai. One of the results of this fault, as has already been explained, is to cause a duplication of the beds through which it passes, a condition of things which is particularly noticeable in the passage of the fault through the Hospital

Hill quartzites (H.H.Q.) east of Krugersdorp. The misunderstanding to which this duplication has given rise is well seen in a section through the Witpoortje country which appears in Dr. Molengraaff's work.

THE WITPOORTJE FAULT.

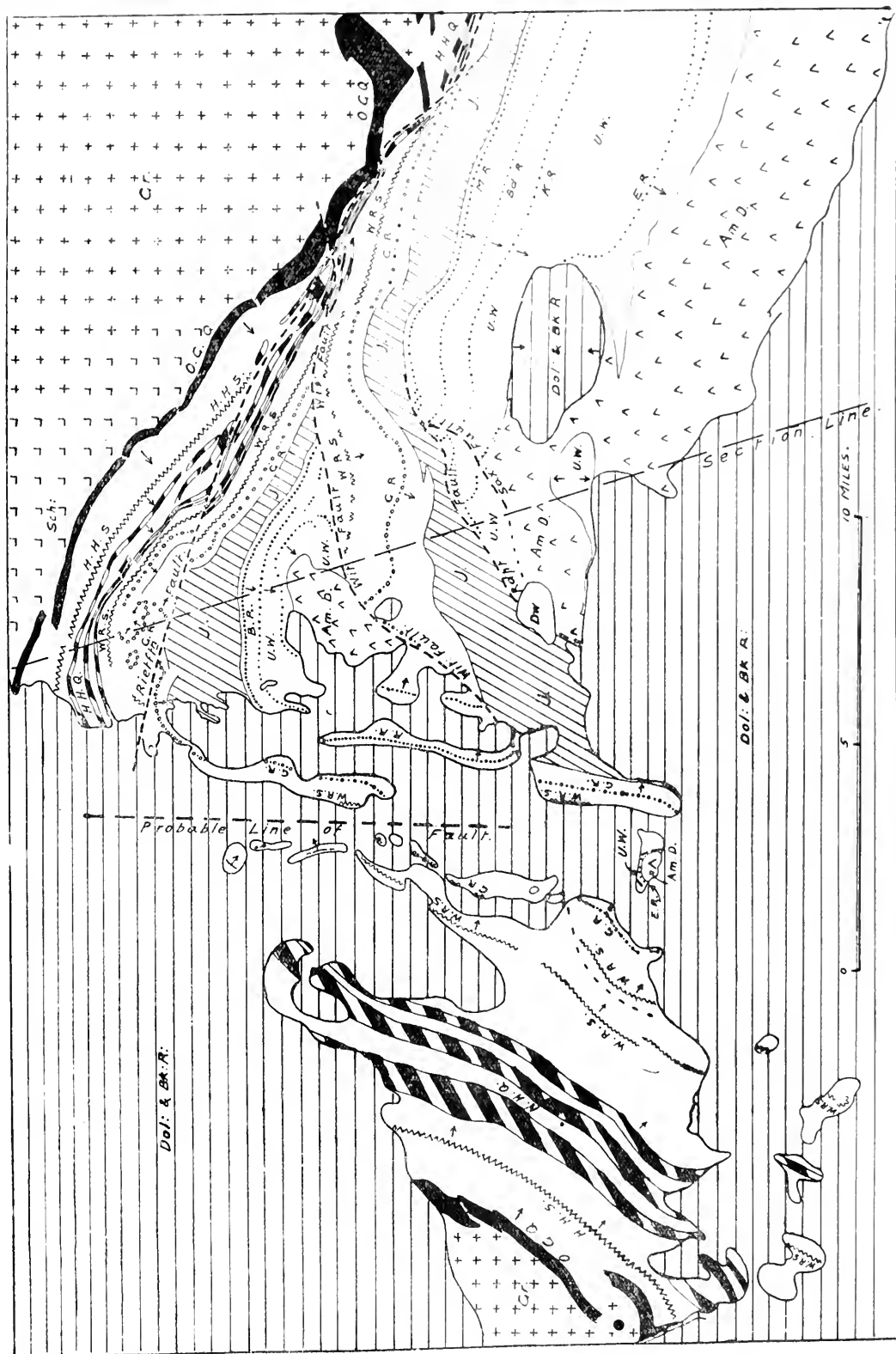
South of the Rietfontein fault comes the Witpoortje fault (Wit. Fault), or "Witpoortje Break," as it is commonly known. It appears to intersect the Rietfontein fault to the north of Hannburg, and, running in a westerly direction for some distance, finally courses to the south-west and is last seen at the extreme southern end of the Randfontein Reefs (R.R.) extension. The principal point to be remarked in connection with this fault is that, contrary to the common belief which has prevailed for many years, it is not responsible for the cutting off of the Main Reef series beyond the Princess Estate. To the south of the Witpoortje fault there is a wide area of lower Witwatersrand rocks, including the West Rand shale (W.R.S.) and Government Reef horizons, together with the Jeppesdorp beds (J.), the latter showing a large development towards the south-west of the area. To the north of the fault a patch of the upper Witwatersrand system (U.W.) is found on the Botha's Reef area, but there is no evidence that this portion was at any time directly in contact with that which is found in the neighbourhood of the Princess Estate property. The originally intervening section lies probably below the latter area, as may be inferred from the section which accompanies our sketch map. It is not easy to say what happens to the Witpoortje fault after it disappears beneath the dolomite and Black Reef covering at the extreme south end of the Randfontein Company's ground, but, as our map shows, it not improbably continues towards the south-west and reappears from under the Black Reef beds in the next open area, where a fault duplicates a section of the West Rand shales a little to the west of the famous Middelvlei inlier.

THE ROODEPOORT FAULT.

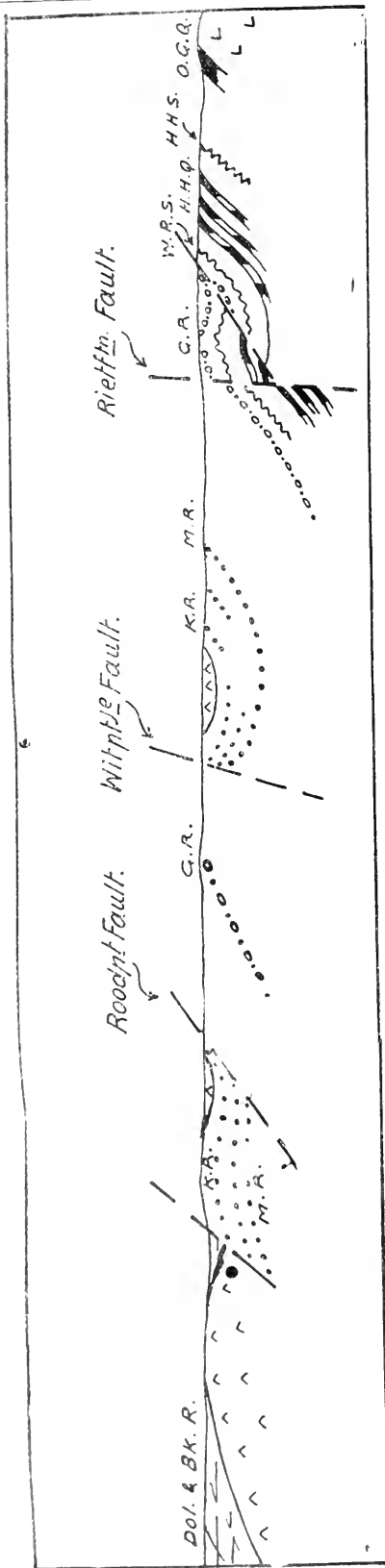
The Roodepoort fault is a discovery for which, it seems, Dr. Mellor deserves sole credit. Owing to the fact that it follows an apparently normal contact between the Jeppesdorp beds and the lower portion of the Upper Witwatersrand (U.W.) system, near the Main Reef horizon, its presence has hitherto been unrecognized. It is this fault which is responsible for the cutting off of the Main Reef series, and for the overlying beds and bankets. It has the effect of bringing the shale series which lies below the Main Reef horizon against the upper Witwatersrand quartzites almost along its whole length, and along this faulted junction most of the prospecting operations in that neighbourhood have been carried on for many years past, the line being regarded as the base of the upper Witwatersrand system and consequently near the Main Reef horizon.

THE SAXON FAULT.

A still more important fault is that named by Dr. Mellor the Saxon fault, from the fact that it cuts off the Main Reef horizons in the vicinity of the Saxon mine. It continues southwards, and cuts off the succeeding horizons in that direction, one after another, then marking a dividing plane between the upper Witwatersrand rocks and the anhydrolal diabase (Am. D.) of adjoining areas, and eventually running into the Roodepoort fault under a patch of comparatively recent rocks which resemble those of the coal measures south of Johannesburg. The Saxon fault dips south-westwards, and the contact between the Main Reef series and the plane of the fault in depth would tend to the



SKETCH MAP OF THE GEOLOGY OF THE WESTERN WITWATERSRAND (AFTER E. T. MELLOR).



SECTION ACROSS KRUGERSDORP (AFTER E. T. MELLOR).

south, and thus well to the west of that ground which was riddled by boreholes put down some time ago by the Goerz group.

WEST RAND FAULT.

Another fault, of which the existence seems to Dr. Mellor to require little actual proof is one which lies west of Randfontein, and runs probably in a north and south direction, and is indicated by a distinct and remarkable variation of dip and by the duplication of strata which is shown on our map.

THE CARRICK THEORY.

Space does not admit of our dealing at greater length this week with Dr. Mellor's most interesting conclusions. Reference must be made, however, to those points in regard to which it is at variance with Dr. Carrick's reading of the geology of the West Rand. Much will be explained in this connection if we state briefly that what was taken by Dr. Carrick, and by Dr. Hatch who supported his view, to be the Hospital Hill slate (H.H.S.) is in reality the very similar West Rand shale (W.R.S.). This error is much in evidence to the west of Middelvel. The well-known Middelvel inlier which was considered by Dr. Carrick to be a portion of the Botha Reef series, and which formed an important part of the reasoning upon which the Western Rand Estates theory was based, is looked upon by Dr. Mellor as showing Elsburg blankets. It is not easy to explain how this fragment of Elsburg rocks happens to have come where it is, but some analogy may be found between it and that of similar beds lying north of the Witpoortje fault.

THE SECTION ACROSS KRUGERSDORP.

It is as well, perhaps, to explain that our section is not a reduced copy of that of Dr. Mellor, but has been roughly copied from a diagram which was exhibited at the last meeting of the Geological Society. It is intended to be suggestive rather than accurate. Towards the right end a minor fault which does not appear in the map will be observed. Between this and the Rietfontein fault occurs that curious little folding of the Government series which is shown on the map as a sort of basin, and is well known to geologists who have studied the conditions of that neighbourhood.

French Rand G.M. Co., Ltd

The report of the directors for the year ended 31st December, 1912, to be submitted at the sixteenth ordinary general meeting of shareholders, convened for Monday, 31st March, 1913, states that the shafts still remain full of water, and as no work has been done the value of Mine development in the balance sheet has been brought forward at the same sum as at the close of the previous financial year. The net cash liability at 31st December, 1912, amounted to £25,350 15s. 10d., an increase of £3,279 13s. 9d., when compared with the previous year. This is explained as follows:—Excess expenditure over revenue, as per profit and loss account, £4,931 19s. 3d.; increase in amount of sundry debtors, £279 4s. 0d.; total, £5,211 3s. 3d.; less net proceeds of sale of industrial shares, £1,455; less machinery, plant, stores, etc., sold, £451 9s. 6d.; less sale of mining stand, £25. Included in the liability of £25,350 15s. 10d. is an amount of £2,285 14s. 4d. for fees credited to directors since 1st December, 1909. No opportunity has presented itself, as yet, for placing the Company in a position to resume mining operations; in the meantime current expenditure is being kept at the lowest possible minimum, and is practically confined to the payment to the Government of claim licences and to the cost of caretaking and maintaining the property.

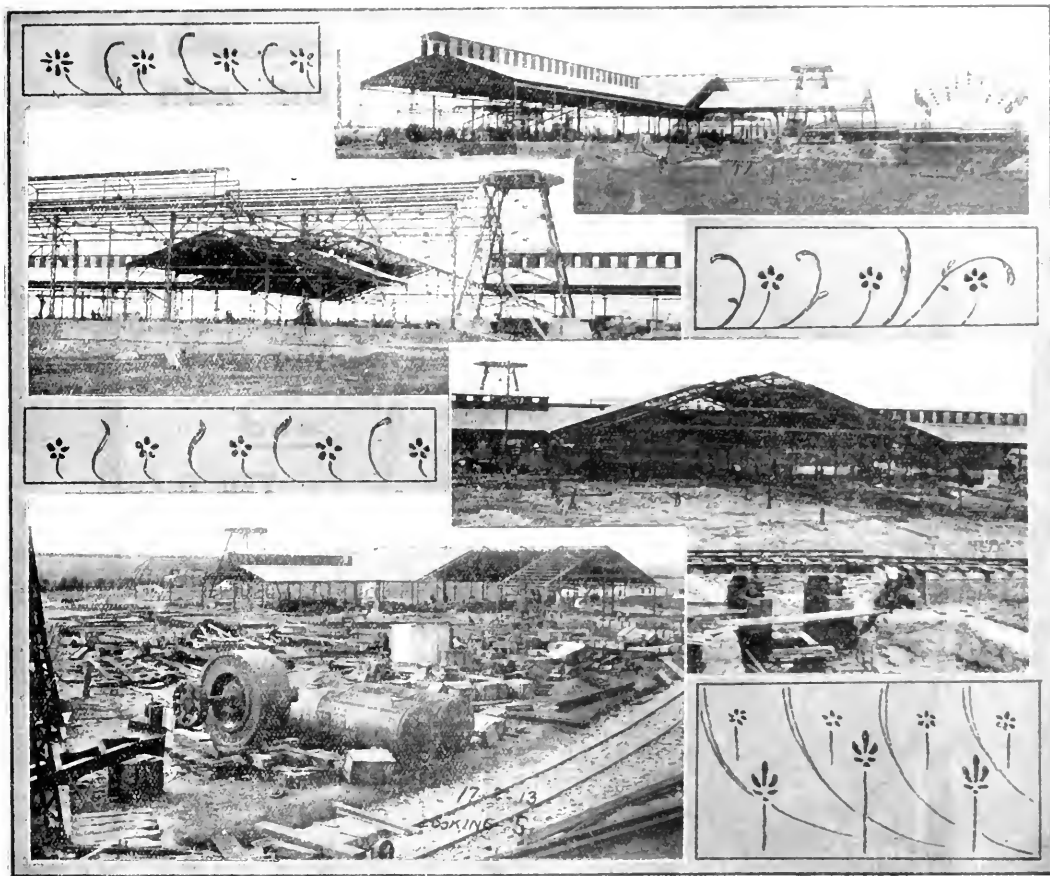
Mr. Arthur Yates, general manager of Lebong Sorlit Gold Mining Co., Dutch East Indies, is passing through Johannesburg en route to London.

PROGRESS AT THE VEREENIGING STEEL WORKS.

Construction Well Advanced Despite Some Unavoidable Delay—Rolling Mills to Start in June.

The accompanying photographs give a good idea of the progress being made with the construction of the furnaces and rolling mills for the S.A. Steel Company at Vereeniging. The first furnace is expected to be ready in April, and actual production from the rolling mills is expected to begin in June. Owing to the heavy demand on transport facilities, consequent on the trade boom in Great Britain, considerable

delay has been experienced in securing delivery of the plant. As a consequence the completion of the work at Vereeniging has been delayed. Naturally, the best steel and most important part of the work is in way of foundations and excavations, which, of course, cannot be shifted to others. It is noteworthy that thousands of tons of scrap iron and steel are already deposited on the site and tenders are arriving every week.



THE VEREENIGING STEEL WORKS. THREE VIEWS.

New Northern Railway Construction.

In the Assembly last week Sir Lionel Phillips (Yeoville) asked the Minister of Railways and Harbours—(1) Whether it is true that his predecessor in office promised to have a route surveyed to connect the Selati with Pietersburg-Bandolierkop railway via Haenertsburg; (2) Whether such survey had been made and with what result; (3) Whether it has been decided to carry the Tzaneen line to Zoekmakkaar; and (4) if so, whether he will ask the Railway Board to have a survey made of a line to connect Haenertsburg and the Woodbush Village with the Pietersburg-Bandolierkop line, and whether he will take into consideration the construction of a light line for the purpose in his programme of railway construction. To this the Minister replied: (1) The answer is in the affirmative; (2) Yes, a flying survey was made, which showed that a line could be built but at a considerably

greater expenditure than the Zoekmakkaar section; (3) Yes, for a further survey is not considered necessary at present. The claims of Haenertsburg and Woodbush districts will be borne in mind when considering future railway extension programme. Railway construction proposals for this session have not been decided upon.

Discussing land tenure by natives, the "Volkstem" makes some drastic suggestions. It demands that any legislation passed in this connection shall be retrospective in effect, and shall make all past land transactions of natives inoperative and void, with the proviso that the purchase prices shall be refunded them out of the Treasury. The land thus coming into the Government's possession should, the "Volkstem" thinks, be offered for sale to white people.

The Deepest Borehole in the World.

Near Czuchow, in Silesia, a borehole has been sunk to a depth of 2,240 metres; the time required for its completion was 982 days. The first 53 metres were bored by augur, the next 523 metres by chisel, and the rest by diamond drill. More than 700 carats diamonds were used up. The total cost of the bore was M. 300,000, or M. 144.5 per metre. It was expected that the coal measure (the depth of which was to be ascertained by the bore) would have been struck at 1,500 metres, and the original width of the hole was made in accordance with that assumption, but when that depth was exceeded the hole had to be widened, causing a great deal of extra work, which unfavourably affected the cost as well as the length of the working period. Other boreholes of great depth have been sunk in Germany at from M 60 to M. 80 per metre. The rods were constructed of Mannesmann tubes of different diameters; 2,000-metre running length of the tubes weighed 14,200 kgs. At 500 metres depth the temperature was 26 degs.; at 1,000 metres, 40 degs.; at 1,500 metres, 69 degs.; and at 2,221 metres, 83.4 degs.

Durban Roodepoort G.M.

The following is the report for the quarter ending December.

Revenue, £114,292, or £1 10s. 5d. per ton from 75,090 tons milled; cost, £92,838, or £1 4s. 9d. per ton; profit, £21,454, or 5s. 8d. per ton. The development footage for the quarter is lower by 306 feet. Disclosures on both reefs are again satisfactory, especially those of the South Reef. No estimate is given of the payable tonnage developed for the half-year, as the annual report to be issued in April will state this information for the whole year, together with particulars of the ore reserves on hand. The yield shows an increase of 5s. per ton, but, owing to an increase in the working costs of 10d. per ton, the profits for the quarter are lower by £1,695. The tonnage milled is lower by 690 tons. Capital expenditure for the quarter amounted to £8,994, almost the whole of which was spent on the 12th level pumping installation. There remains £7,851 to be spent on authorised votes. Good progress is being made with the cutting of the sumps in connection with the 12th level pumping scheme at No. 1 shaft and the driving of the main haulage level.

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1912 AT THE VILLAGE DEEP.

A Record Year—Good Development—Latest News from the Property.

The profit of the Village Deep G.M. Company for the year ended with December last was £291,633, the earning for the first three quarters of the year being £229,773 and that for the final three months £61,860. This is the largest profit earned in the history of the company. The interim appropriation account, which is subject to amendment, shows that the balance brought forward at December 31st amounts to £25,565, and this with the balance of working expenditure and revenue account for the twelve months makes a credit balance of £320,228. On the debit side Government tax for the nine months ending 30th September figures at £18,530 and for the three months ending December 31st £5,776, or a total for the year of £24,306. Two dividends paid out, one of 7½ per cent. and the other of 10 per cent., absorbed £185,617, leaving a balance to be carried to the balance sheet of £110,305. The credit balance of appropriation account, it is explained, is not wholly available for distribution. The capital expenditure for the year ended 31st December, 1912 (£12,765 on new construction, etc., £153 on property account, and £5,172 in respect of undermining rights annuity) have not yet been appropriated. The final credit balance will not be determined until the balance sheet and accounts as at December 31st have been prepared and audited. The working expenditure and revenue account for the quarter ending December 31st shows that the total working expenditure was at the rate of 20s. 4d. per ton, working profit 8s. 11d., and revenue 29s. 3d. per ton. The ore received from the mine amounted to 174,778 tons. Of this 15·4 per cent. was rejected as waste rock, leaving 149,900 tons milled by 180 stamps and 7 tube mills. 3,413 feet

were risen, driven and sunk, of which 2,382 feet were sampled, giving a value of 52s. 11d. over 30 inches. No estimate is given of the payable tonnage developed for the half-year, as the annual report, to be issued in April, will give this information for the whole year, together with particulars of the ore reserves on hand. The main incline shaft (Turf section) was sunk 98 feet, making its depth below the 19th level 123 feet. In addition, work has progressed well in cutting the engine chamber and in cutting and equipping the 19th level shaft station. The bottom of No. 1 incline shaft having been converted into a chute, the east side of the 16th level haulage (Turf shaft) commenced work on 22nd December. Incline hoists deposit ore from the upper levels into this chute. The conversion has proved very successful, and to date has handled about 800 tons per shift. As soon as the erection is completed of the new man hoist at No. 2 shaft, hauling operations from No. 1 shaft will be discontinued. It was anticipated that the erection of the man hoist at No. 2 shaft would have been completed during this quarter, but progress has been delayed by the non-arrival of plant, which accounts for the small expenditure on capital account, which has amounted to a total of £5,170. The sum of £39,000 remains to be provided for the completion of authorised work, and estimates are in course of preparation for a new hoist at No. 3 incline shaft.

We learn that since the quarterly report was written development has continued to give good results—particularly in the Turf Mines section of the property. Sinking is now proceeding to the 20th level. There has been a breakdown in one of the electric hoists at the Turf Mines shaft, which has somewhat affected the tonnage for February.

RAND REEF VALUES AT DEPTH.

Collected Evidence to Answer the Pessimists.

MR. ELKAN, in the course of his presidential address at the annual meeting of the Chamber of Mines on Thursday, noted the numerous instances shown recently of very excellent reef values disclosed at the present deepest points of working in several mines all along the Rand. He gave the following instances. The Geduld Proprietary Mines struck the reef but a few days ago at the deepest point of its workings—1,925 feet vertical from the surface—obtaining the value of 12·1 dwts. over a width of forty-eight inches. The New Modderfontein Gold Mine, in its circular shaft, has struck the reef at a depth of 2,158 feet, where it disclosed a value of 13·2 dwts. over 48·4 inches. At the Modderfontein Deep levels, in the incline shaft, which has reached a point equal to a vertical depth of 3,100 feet from the surface, a value of 10 dwts. over 46·8 inches has been obtained along a distance of 420 feet. At the Cinderella Consolidated, on its deepest, the fifth level, which runs at a vertical depth of 4,440 feet from the surface, 1,350 feet driven and sampled give an average value of 9·1 dwts. over 42 inches. At the City Deep, on its deepest, the tenth level, or at a vertical depth of 3,286 feet, the Main Reef Leader has given an average value of 14·7 dwts. over 28·9 inches. At the nineteenth level—the deepest—driven at a vertical depth of 4,190 feet, showed the main reef leader to have a value of 10·4 dwts. over 36 inches. The Crown Mines, at its deepest working, the sixteenth level crosscut from No. 5 shaft, at a vertical depth of 2,660 feet, has exposed a large body of reef, being the Main Reef Leader and the Main Reef, of quite abnormal width and value—the Main Reef Leader

alone has given 11 dwts. over 132 inches. Going further west, we come to the Consolidated Main Reef, which quite recently struck the reef in its No. 3 vertical shaft at a depth of 2,365 feet, at which point it assayed 17½ dwts. over 48 inches. In the Roodepoort district, I find at the Princess Estate that in the central section at the deepest working point, viz., 2,758 feet from the surface, the 1,690 feet driven on the 12th level have given an average assay value of 9·31 dwts. over the milling width of 26 inches. "You will agree," said Mr. Elkan, "that these figures are, to say the least, encouraging, and for the benefit of people living at a distance, who are naturally less conversant with local conditions than we are, I wish to mention that the mines I cited are many, many miles apart, and are spread all over the Rand from East to West. Such values allow one to be optimistic as to the future of these gold fields, and allow one to look forward to a very large production of that much-sought-after metal—gold."

A New Rhodesian Industry.

The prospectus has been issued of the Premier Portland Cement Co. (Rhodesia), Ltd., which intends to manufacture a standard Portland cement from the valuable deposits of the necessary materials situated on the Government out-span No. 1, Tuli Road, in the Bulawayo district. The directors of the company are Messrs. B. I. Collings, A.I.M.M., W. Cunningham, A. G. Hendrie, A. M. Isaac, William Fleming (of Rowe, Marshall and Fleming), quarry-master, Johannesburg. Messrs. H. Fraser & Co., Cam Building, Salisbury, are the secretaries.

Correspondence and Discussion.

Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiences of Readers.

The Nissen Stamp and Dorr Thickener.

To the Editor, *South African Mining Journal*.

Sir,—A good deal of misapprehension appears to exist in regard to the introduction of the Nissen stamp and the Dorr thickener in South Africa. Rhodesia has come to the fore lately in the adoption of both these devices; but the credit of introduction should go where it belongs, namely, to the Rand Mines. The Nissen stamp was first installed at the City Deep some two years ago; and a Dorr thickener tank at the City and Suburban somewhat later. The result of trials in both instances was so favourable, I understand, that both devices will be adopted in the next new mill to be erected by the Rand Mines group. The Nissen stamps are now a part of the operating plant at the City Deep. The Dorr thickener at the City and Suburban served its purpose as a trial machine, but was dismantled because it could not be worked in satisfactorily with the existing decantation system.—Yours, etc.,

CONTRIBUTOR.

Johannesburg, 22nd Feb., 1913.

Phthisis Compensation and the Men's Contribution.

To the Editor, *South African Mining Journal*.

Sir,—As adepts at the game of "Heads I win, Tails you lose," the Mining Houses of South Africa surely are without parallel in the history of the world. Not until recently were directors, consulting engineers and managers aroused to the necessity for combatting the awful ravages of miners' phthisis along the reef. For years appeals fell on deaf ears, but at last the machinery of the Government was brought into action, and now-a-days the mines are compelled by law to provide plenty of water in the underground workings and we (the miners) are compelled to use such water. In terms of the Miners' Phthisis Act of 1912, every employer must pay to the Insurance Fund, "during the first two years, an amount equal to 5 per cent. of the earnings of each miner employed by him, and thereafter an amount equal to $7\frac{1}{2}$ per cent. of such earnings. The employer is allowed to deduct from the earnings of each such miner $2\frac{1}{2}$ per cent. of the wages." Now, Sir, it has recently been authoritatively stated in the Press and elsewhere, that miners' phthisis is a thing of the past on the Rand to-day. It is, we are told, over once and for all, there is no more dust in the mines. But still we are muled in the sum of $2\frac{1}{2}$ per cent. of our wages. The point I wish to make is that although miners' phthisis "is a thing of the past" on the Rand, we (the miners) still have to pay a hard-earned sixpence in the pound to fight disease which does not exist! This, indeed, is a game of pitch and toss in which we have to call to a faked coin!—I am, etc.,

ONE OF THE PAYERS.

Germiston, February 25th, 1913.

[Provision is made for additions to or removals from the list of mines to which the Act applies, and, on petition for the removal of any such mine, the Minister may reduce the amount of its contribution to the Insurance Fund.—Ed., S.A.M.J.]

The Miner as Critic.

To the Editor, *South African Mining Journal*.

Sir,—After reading the speech of the President of the Mine Managers' Association, the public will come to the conclusion that mining will soon be as healthy as company promoting. The real truth is, mining will take longer to kill you now than it did—that's all! I should like to learn how much the new regulations for the prevention of dust have affected the life insurance rates. The insurance people will be badly "slipped up" if they believe what the mine managers tell them. During the past eight months I have worked on two mines. The first was one of the most healthy, the second one of the most unhealthy, mines on the Rand. The first seemed to me like a health resort after some of the places I had been working in, and after my working-place there had been well watered down, the air seemed purer and freer from dust than on the surface—but it was not so, for wherever the bright light of the lamp shone the air could be seen to be full of impalpable dust. In the same section I asked a mine official why he wore a respirator. He said, "Anyone who wants to get work done down a mine has got to eat dust." "People who talk about doing away with dust down a mine don't believe what they say themselves, if they are practical men," he added. "That need not prevent you from dashing the water about; we none of us want to die any sooner than we can help." The other mine I spoke of has a bad name for dust and gas and heat, and ably upholds its reputation. I should very much like to be present on any occasion when the President of the Mine Managers' Association thinks it's worth his while to go down this mine—say, on Saturday afternoon shift—preferably accompanied by two medical men. I should certainly propose (dust and gas and smoke permitting) that he be asked to read over in a loud, clear voice that portion of his speech where he states the measures which he and his class have taken, "have been so effective that dust in circulation is now scarcely appreciable," and that therefore "new cases of miners' phthisis should soon be of rare occurrence." Miners often argue the point about which are the most unhealthy mines on the Rand, and it is generally agreed that there are two worse than this one and two or three just as bad. Four hours after blasting and for two or three hours after a shift starts the atmosphere is grey with dust and smoke, and gas can be smelt everywhere, no matter how much water is used. It is hard to say whether this mine is a blessing to the much-abused miner who misses shifts and drinks, or whether his class is a blessing to this mine. Anyhow, while he is working he is the most useful class they can get—his and the men from southern Europe, who also dock to such places. The rest are made up of men so old they would find it difficult to get a job in a healthy mine and men so young and inexperienced that they are glad to find a place where they can get paid and gain experience at the same time. Anyhow, I am certain that no man can work six months in this mine without his health being permanently injured—in spite of what the President of the Mine Managers' Association says. Again, we all know that the regulations for the prevention of dust are not strictly enforced where it is difficult and awkward to carry them out. I know a youngster under twenty who is working to-day in a place which means certain death to anyone who sticks to it. He is putting up a raise in a back stope. Under him in the stope are working six big machines. When he and his mate started they knew nothing of the work, and £12 was what they did the first month—double shift. They were not fired, because no one else would work there. During the last five or six months they have gradually improved to £50

a month. They have never made wages, but they always get their £1 a shift, and that is why they stick it. On the surface they could not make 5s. a day. The point is that this raise is about 600ft. above the nearest connection with the shaft, and the pressure of water is never strong enough to be on the safe side, I will say hardly ever strong enough to reach the top of the raise. The inspector, of course has never been up there, but whenever an inspector is down the mine this lad is given the wink and he shuts off the air, clears everyone out of the raise and comes down and sits in the drive until all danger is past. This is what miners call

"blood for money." And what about the goldless sort who have been putting up nothing but dry holes for the last six months? I've seen a Kafir die of pthisis a few months after he started this kind of work. This company is making lovely profits. If some one offered me 1,000 of the shares free I expect I should accept them, but I should think a lot more of myself if I refused them.—Yours, etc.

MINER.

Some passages bordering on the Phillips have had to be deleted from the above.—Ed., S.A.M.J.

RAND PROFITS IN 1912 AND 1911.

Returns Classified According to Districts—Further East Rand Shows Largest Increase.

We give hereunder a statement of the profits earned by the various mines of the Rand in 1912 and 1911, according to (a) Central Rand, (b) East Rand, (c) West Rand, and (d) Further East Rand. From this it will be seen that in each division increases were recorded. The totals stand as under:—

	1912.	1911.	Increase.
Central Rand	£5,799,900	£5,116,800	£353,100
East Rand	3,264,000	3,251,800	9,100
West Rand	1,571,200	1,549,400	21,800
Further East Rand ...	1,873,400	1,082,400	791,000

CENTRAL RAND—	1912.	1911.	Increase.	Decrease
City and Suburban ...	£250,100	£174,000	£76,100	—
City Deep	292,600	127,300	165,300	—
Cons. Langlaate	124,000	83,300	40,700	—
Consolidated	123,600	90,000	33,600	—
Crown Mines	1,294,700	1,272,900	21,800	—
Ferreira Deep	538,400	405,000	133,400	—
Geldenhuis Deep	140,700	235,000	—	£94,300
Jupiter	67,400	36,900	30,500	—
Jumpers	20,400	39,300	—	18,900
Langlaate Estate	182,300	219,400	—	37,100
Meyer & Charlton	206,600	96,200	110,400	—
Nourse Mines	275,000	237,900	37,100	—
New Goch	57,500	127,900	—	70,400
New Heriot	106,300	114,000	—	7,700
Robinson Deep	405,000	408,000	—	3,000
Robinson	772,900	910,900	—	138,000
Village Deep	270,600	225,800	44,800	—
Village Main Reef	496,800	467,100	29,700	—
Wolhuter	175,000	175,900	—	900

EAST RAND—	1912.	1911.	Increase.	Decrease
Cinderella Cons.	35,900	37,900	—	2,000
East Rand Prop.	1,075,400	913,900	161,500	—
Ginsberg	83,100	59,100	24,000	—
Glencairn	35,000	28,800	6,200	—
Knight Central	54,400	70,800	—	16,400
Knights Deep	209,400	281,700	—	72,300
May Consolidated	70,200	126,400	—	56,200
New Primrose	220,100	217,600	2,500	—
New Rietfontein	44,900	44,200	700	—
Sinumer & Jack	532,900	582,900	—	50,000
Sinumer Deep	45,300	66,700	—	21,400
Wil. Deep	205,000	301,500	—	96,500
Witwatersrand	231,400	174,200	57,200	—
Rose Deep	421,000	349,400	71,600	—

WEST RAND—	1912.	1911.	Increase.	Decrease
Aurora West	41,900	30,400	11,500	—
Bantjes Cons.	74,700	53,900	20,800	—
Cons. Main Reef	123,600	90,000	33,600	—
Durban Road, Dp.	81,900	60,700	21,200	—
Durban Roodepoort ...	37,500	54,800	—	17,300
Lancaster West	5,200	44,000	—	35,800
Luipardsvlei Est.	22,100	29,000	—	6,900
Main Reef West	105,400	116,200	—	10,800
New Unified	60,300	53,600	7,300	—
Princess Estate	6,500	25,700	—	19,200
Randfont. Central	803,100	862,000	31,100	—
Roodepoort Unified	41,700	82,300	—	40,600
West Rand Cons.	77,300	50,700	26,600	—

FURTHER EAST RAND SECTION—	1912.	1911.	Increase.	Decrease
Brakpan Mines	428,100	114,300	313,800	—
Geduld	54,700	38,700	16,000	—
Modder B.	357,800	48,700	309,100	—
New Modder	503,900	370,200	133,700	—
New Kleinfontein	240,800	237,700	3,100	—
Van Ryn	288,100	272,800	15,300	—

The Lane Mill in Zululand.

The following is a copy of a letter addressed to the Small Mines Supply and Engineering Company by Mr. C. Harrison Dixon, late of the Vira Mine, Zululand: "Referring to your inquiry as to work done by the Lane Mills supplied by you to the Vira Mine, I have pleasure in placing before you the following information which may be of some interest to you. During the period that the mills were running under my supervision they did excellent work, there was some trouble with the bearings when we first started up, but this was entirely due to the fact that the grease we had on the mine was too hard for the type of lubricator which was supplied with the mills, this, however, was remedied as soon as I was able to obtain a suitable lubricant. The class of ore that we were treating was, as you are aware, of a most difficult nature to mill, being mostly a glist formation (mica and talc schist) and this as soon as it came in contact with the water formed into a very strong and sticky clay which was inclined to clog

and stick to everything it came in contact with, also the ore from the surface of the mine contained a very large quantity of vegetable matter such as grass and roots, etc., all this naturally tended to hinder milling, but under these conditions I have frequently put as much as seventy tons per mill through per day. Almost the whole of the gold recovered was recovered in the mill pans. I have not got the exact figures on record here, but would feel quite safe in saying that less than 20 per cent. was recovered on the plates and the residues, which we saved at first for assay, were found to contain so little value that we allowed them later to run into the spruit including the concentrates. The only renewal of parts necessary during the eight months that the mills were running were two or three of the small rollers and pins for the centre bearings, this being due to the faulty lubrication at starting, and after being renewed gave no further trouble. I have no hesitation in saying that the entire system of internal amalgamation as embodied in the Lane Mill is most satisfactory and that a better extraction can be obtained in a single treatment with Lane Mills, than with stamps and a cyanide plant.

Rhodesian Section.

LATEST MINING NEWS.

East Gwanda Liquidated—Zambesia Exploring Co.—Sale of the Morven Mine—The Lutembwe Goldfield—The Pickstone Mine—Amalgamated Properties—The Bwana M'Kubwa's Plant—Points from the Chamber of Mine's Report—Mineral Production in 1911 and 1912.

AN interesting announcement is made regarding the East Gwanda group of mines, which are now likely to pass into other control. It may be recalled that towards the end of last year the London and Rhodesian Mining and Land Company entered an action in the Home Courts against the East Gwanda Mines and others, and as a result Mr. W. H. Peat, of Ironmonger Lane, London, E.C., the receiver on behalf of the prior lien bondholders of the East Gwanda Mines was authorised to dispose of the company's assets. These comprise the West Nicholson, Olympus, Jessie, Valley, Eagle Vulture, and Geelong mines, with machinery, and offers for their purchase are invited. Mr. Francis Drake, of the Rhodesia Gold Mining and Investment Company, has been appointed local agent in the matter.

* * * *

An extraordinary general meeting of the Zambesia Exploring Company, Limited, was held in mail week, at Winchester House, Old Broad Street, E.C., for the purpose of approving a resolution authorising the directors to allot at par to those holders having options to take up shares granted by the resolution of February 24, 1911, and who apply for them on or before the 28th prox., one share for every 10 shares or part of 10 shares included in their options, and, further, to grant to such holders options to take up at par the balance of the shares included in their existing options up to February 28, 1915, and to allot or otherwise dispose of any shares as to which any of such options should not be exercised. Mr. Tyndale White, who presided, remarked that it would be apparent to the shareholders that the option-holders had had no opportunity, owing to depressed markets, to make any profit on their options, and it was only fair that they should, if possible, be given an opportunity of doing so. It would be recollected that, two years ago, this company made an issue of £250,000 five-and-a-half per cent. debentures, the subscribers to the issue receiving the right to apply for shares at 30s. per share until February 28 next, the proceeds of such shares to be used towards the redemption of debentures. As the price of those debentures had also dropped since that date, this was another reason why the option should be extended and the price reduced. He concluded by moving the adoption of the resolution, which was seconded by Mr. Sheffield Neave, and unanimously agreed to.

* * * *

The sale of the Morven Mine and the farm on which it stands took place as advertised at Mr. Bridgman's auction rooms, Market Hall, Bulawayo, on Saturday evening. The interest which the event aroused is to be gauged from the fact that, despite inclement weather shortly prior to the hour of commencement, there was a representative gathering of the public. The sale was at first in lots which were provisionally disposed of. Here the mine and machinery elicited a final bid of £60, and the rubble claims adjoining went for £15, while the farm, which is known as Formosa, was bid up to £1,700. Claims, machinery and farm, which had in the aggregate fetched £1,775, were then offered as one lot, when a bid of £1,800 was promptly forthcoming, thus negating the provisional sale. The property was finally knocked down at £1,800 to a down country purchaser.

* * * *

The following details of recent development on the claims of the North Charteredland Exploration Company, in Northern Rhodesia, are published: Lutembwe East Reef:

210ft. of driving has been completed, exposing an average width of reef measuring 6ins., and having an average assay value of 20 dwts. Some of the samples from the reef have gone as high as eight ounces. Fitchcanie Reef: A prospecting shaft has been sunk 40ft.; the reef in the shaft averages 2½ft. with an average assay value of 40 dwts.; assays here have run as high as 100 dwts. Fresh discoveries are being made, notably in the Chankanka, where the reef in the present prospecting shaft assays 76 dwts., and is 10 inches in width; and also another outcrop giving assays up to 14 dwts. On the whole things look very encouraging and the gold-bearing area of the reefs will cover a considerably larger area than was originally expected. Good rains have fallen in the district and everything points to an abundant harvest of mealies and other native grains.

* * * *

The Pickstone Mine, by the end of the month, hope to have their 10-stamp mill and also two Chilean mills at work

* * * *

The Amalgamated Properties of Rhodesia, Ltd., are now offering the Champion Mine (Umtali) on tribute. A large amount of development work has been done and there is a considerable tonnage of developed ore. The same company is letting the Grand, Golden Frog, Constance, Odzi, and Hillandale claims, also in the Umtali district, on tribute.

* * * *

The water concentrating plant to treat the high-grade ore at the Bwana M'Kubwa Mine is now undergoing preliminary trials. The capacity is 75 tons per day, and it is hoped to earn a profit of about £3 per ton of ore treated. This installation is more or less of a stopgap to provide funds for the further development of the mine and for the cost of the additional treatment plant which will be required for the treatment of the "middle" and low-grade ores. The erection of the larger equipment depends upon a reduction in the railway rates. There are 120,000 tons of high-grade ore available above the 350ft. level, so that there is an ample supply of material for the new plant.

* * * *

The Executive Committee of the Rhodesia Chamber of Mines, in the course of their annual report for 1912, to be presented at the 18th annual meeting of the Chamber, on the 5th of March, state, inter alia:—

Native Labour.—The following is a summary of the average number of native labourers employed on Southern Rhodesian mines during the past year, comparing same with the two previous years:—

	1912.	1911.	1910.
Southern Rhodesia (local)	12,928	11,068	12,738
Portuguese Territory ...	6,608	6,926	6,925
N.W. Rhodesia ...	3,836	4,695	4,897
N.E. Rhodesia ...	5,226	6,597	5,134
Nyasaland ...	5,078	4,890	6,520
Other Sources ...	978	988	1,610
	31,651	38,161	37,824

The monthly average was 22,109 on producing gold mines, 11,750 on non producing gold mines, and 1,167 on coal and other mines. The mortality from disease amongst natives on mines was practically the same as in the previous year.

The total number of recruits received was 11,328 natives, of which 11,724 were distributed to employers. The average period of contract was 11.92 months. The total number of natives repatriated during the period was 6,777. The following tables show the proportion supplied to different classes of employers, and also the territorial distribution: Distribution to employers: Supplied to mines, 6,397 (17.52 per cent.); supplied to farms, 6,537 (11.10 per cent.); supplied to general, 1,189 (8.08 per cent.); total, 11,723 (100 per cent.). The monthly return of recruits received shows: January, 119; February, 338; March, 152; April, 1,918; May, 3,030; June, 2,089; July, 1,219; August, 1,132; September, 1,216; October, 1,396; November, 797; December, 862; total, 11,328. The Committee stated in their report for 1911 that the question of Inspection of Excess Areas was one which was the subject of negotiation with the Government. Further negotiations were carried on during the past year with the result that the Government accepted the contentions of the Committee that excess areas should be reckoned as part of the original block for purposes of inspection. In view of the expiry of certain clauses in the Mining Law affecting royalty and inspections, efforts were made during the year to ascertain the intentions of the British South Africa Company in regard to further legislations. The Company were asked to forward their views, and have presented a memorandum, jointly with the Chamber of Mines, Salisbury, advocating the introduction of a simple system of profits tax in lieu of the existing sliding

scale of royalty. It has been pointed out that the royalty basis bears hardly upon producers of over £3,000 per month and tends to induce producers to keep within this amount in order to evade payment of the higher scale, further, that the effect of the royalty is tantamount to a tax on profits amounting up to 40 per cent. in the case of a low grade proposition, and that a fixed scale of royalty fails to make allowance for the different classes of propositions which have to be dealt with.

The following summary which shows the tonnage dealt with and the source of the mineral production for the two years is abstracted from the Chamber of Mines report:

	1911.		1912.
	Tons Treated.	Fine Ozs.	Tons Treated, Fine Ozs.
From millings	1,903,178	196,157	1,537,952 502,118
From sands	716,751	88,197	561,329 81,482
From slimes	127,085	21,775	161,352 11,116
From concentrates	5,738	19,881	5,792 16,913
From other sources	—	2,211	— 1,218

The following amounts and values of other metals and mineral products were also declared: Silver, 176,532.01 ozs., £20,010; lead, 587.97 tons, £9,253; chrome iron, 69,291.69 tons, £151,600; coal, 216,119 tons, £73,267 (sales); scheelite, 1.35 tons, £100. The total value of the gold and other metal and mineral output was thus £2,961,599, being an increase of £73,810 as compared with the year 1911.

ANNUAL MEETING OF THE PREMIER DIAMOND MINING CO.

Mr. Wagner Resigns under Protest—Mr. Imroth Explains Attitude of Barnato Bros. - Satisfactory Position of the Company.

The meeting of the Premier Diamond Mining Company, Ltd., this week was made eventful by the resignation of Mr. A. Wagner and by a lengthy speech from that gentleman explaining the differences with Messrs. Barnato Bros., which had caused him to resign. Mr. Wagner, who presided in the absence of Sir Thomas Cullinan, said it was a happy coincidence that the tenth report was the best of the series. The balance-sheet was infinitely superior to the one of 1907, though on the face of it, it might not appear so. In 1907 they carried forward a stock of diamonds to the extent of £161,000, but that stock consisted of parcels unsold from previous shipments. The stock they carried forward in the present balance-sheet was, however, of a totally different composition. It was the production of the months of September and October, and he could state that not a stone of the stock mentioned in the balance-sheet was on hand to-day, but had been realised at an advance on the figure shown in the accounts. Furthermore, the dividend record for the year, as shown in the balance-sheet, was £310,000, against £100,000 in 1907. There was not the least doubt that 1912 was a record year in the history of the company. After dealing with the details of the position, Mr. Wagner said in regard to the Diamond Law, he regretted again to have to disappoint them. Their claim for a reduction of the Government percentage had not yet been recognised. He remained firm in the conviction that there was nothing but justice in that claim. Even in German South-West Africa it had been recognised that a proportion of 60 per cent. was an injustice, and could not be maintained indefinitely. Their case was stronger, for whereas in German South-West Africa the land was held by the Crown, companies were holders of the land here.

Mr. Imroth seconded the adoption of the report and accounts. He considered that the interest of Mr. Joel since he had taken an interest in the company had been a great advantage. They had all heard with regret that Mr. Wagner had decided to resign his position. For some ten years he

had directed his great financial talents in the interests of the company, and in times of stress it had been his skill and resource which had pulled the company through. In connection with the directorate, Mr. Imroth emphasised the point that the number of directors did not make any financial difference to the company. There had been no inconsistency on the part of Mr. Joel in regard to the directors, there had simply been an evolution of ideas due to change of circumstances. His firm had first bought an interest on a small scale. They became more and more convinced of its sound position, and obtained larger holdings, so that to-day they held a considerable portion of the shares, and Barnato Bros. were entitled to representation in proportion to their holdings. Mr. Imroth took a hopeful view of the diamond outlook, remarking that the position of the mine and of the diamond market was entirely satisfactory. He thought it was a matter for congratulation that a man of the financial strength of Mr. Joel, and of such experience in the diamond trade, should have identified himself with their interests. Several other directors paid tribute to Mr. Wagner's work and integrity. The report and accounts were adopted. At the special meeting that followed, Mr. Wagner submitted alterations to the rules, but his proposals were negatived.

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MINE MANAGERS' ASSOCIATION ANNUAL MEETING.

An Authoritative Review of Rand Problems of To-day.

The following is the address of the President of the Association of Mine Managers (Mr. R. C. Warriner), at the annual meeting held on the 21st of February, 1913: Gentlemen,—You have before you the Council's report, and it deals very fully with various matters to which the attention of the Association has been given during the year just concluded. You will note that financially, we were practically in the same position on the 31st of December last as we were at the end of the previous year, our revenue during the year having balanced expenditure within £20. We had on fixed deposit with our bankers the sum of £1,000, and other assets in excess of liabilities amounting to £79 12s. 6d., so that the sum carried forward to the current year's account amounted to £1,079 12s. 6d.

NO STRIKING INNOVATIONS.

Though the year under review has not been one containing many innovations, yet its record has been one of great value, the most important feature of all being the increased spirit of co-operation which has been evident, not only amongst the members of this Association, but between the groups forming the Chamber of Mines. A halt has been called against destructive competition at last, and the leaders of groups, the consulting engineers and the mine managers have started to work together for the common good of the industry. I do not mean to infer by my remarks that all competition is injurious to the general interests; on the contrary, keen rivalry for the best records and the greatest efficiency, when all are working on the same principles, and with equal opportunities as regards the supply and cost of labour, can only be conducive to an improvement in economic results. The doctrine of co-operation is unquestionably the sound one to practice as well as to preach. Where each group is bidding against the others in the labour market and offering higher rates and inducements for service, the cost of production must continuously increase, although individual cases of improved results may temporarily, and only temporarily, be seen. With destructive competition such as I have referred to it would only be a question of time for the low grade mines to go to the wall.

MINERS' PHTHISIS.

In another channel of unity we find the improvement which has taken place in that scourge—Miners' Phtthisis. For years very little headway had been made in fighting that disease, and one of the greatest factors in retarding progress was the absence of a common policy between group and group and mine and mine. For example, if one mine adopted very stringent regulations as to the use of water, it was immediately penalised by the prompt departure of its miners to other mines where the use of water was not enforced to the same extent. During the past year enormous progress has been made in the direction of allaying dust, and I think that I can safely say that with a continuance of the measures at present being adopted all along the Reef, new cases of miners' phtthisis should soon be of rare occurrence. So effective have these measures that the dust in circulation is now scarcely appreciable, even at the development faces in drives and raises. The cost of the industry in money has been considerable, but it has been borne cheerfully and the results more than justify the expenditure. The outsider might well ask how such an improvement has been accomplished in little more than a year, when previously all efforts had been of little avail. It has only been rendered possible by the fact that the Mines Department, the Chamber of Mines, the consulting engineers and the mine managers have all worked in harmony at last on broad minded principles. The abundant use of water in allaying dust has also been largely a matter of education, and the underground workers have begun to learn that in mining such as we have here it is a necessity if disease is to be avoided.

CO-OPERATION IN NATIVE RECRUITING.

Another instance where there is charge of the industry have arrived at an important understanding, common to all groups with one exception, is in the stoppage of competitive native recruiting and the standardisation of native wages. The outcome of this has been the formation of the Native Recruiting Corporation, Limited, which commenced its operations in October last. This organisation provides a means whereby all its members pay the same cost for recruiting and each received its fair proportion of the available labour supply. I need hardly say that from an economic and broad minded standpoint this is one of the most important steps that the industry has ever taken and it should prove a great assistance to the members of this Association in bringing about a reduction of working costs. A new schedule of rates to be paid to each class of native labour has already been put forward by the consulting engineers, after discussion with the Council of your Association, which schedule, although open to improvement, especially as to the rates payable to machine and hammer boys, will result in considerable economies. For example, in a calculation of the effect of the new schedule at the Crown Mines, Limited, where 12,000 natives are employed, I estimate conservatively that a saving of at least £50 per working day will be made. Assuming 200 full working days per annum, the annual saving to that company would be at £10,000. The total number of native employed by all the Witwatersrand companies during December, 1912, was 157,000, and assuming the same relative saving on this number, the new schedule will mean an annual economy of £218,000 to the whole industry. Of course, it must be understood that these figures are only

tough approximations, but at the same time they are sufficient to give an idea of how co-operation is going to help us all, especially when we realise that without it the cost of native labour would have continued to increase both as regards recruiting fees and wages.

NATIVES RATES OF PAY.

I have referred to the schedule rates for machine and hammer boys as being open to improvement, and your Council feels that the wages fixed for these classes of work are out of proportion. Machine boys, especially those on handle work, are probably as a class the most skilled natives on the mine. They are also obliged to work from the beginning of the shift to the end, whereas the hammer boy has often finished work and earned a good wage by mid-day. The wage of a machine native on handle work is 2s. per shift, while the hammer boy can easily drill 48 inches per shift, for which he would receive 3s. In some cases which I have actually known, hammer boys have earned as much as £11 per month or 8s. per day. Now, it is possible to illustrate the importance of the machine boy to the industry in the following manner. The total tonnage mined in December by all the Witwatersrand companies was approximately 2,500,000 tons. No official figures are available showing the average numbers of boys working on hammers and machines, but the records of the Chamber of Mines show that the total hammer shifts returned by all companies was 1,163,113. If we discount this by 10 per cent. for development we find that 1,047,072 shifts were worked on hand stopping, and on the assumption that the average breaking per boy was 75 ton per shift, which is a reasonable duty, the estimate shows that approximately 785,000 tons were hand broken by the employment of 11,200 hammer boys. Had this tonnage been broken by machines, with an average duty per machine shift of only 1 ton (including small machines) and an average of 2½ boys per machine, we find that 11,200 boys would have accomplished the work, or 30,700 boys less than were required to break the same tonnage by hand. These figures, while only approximate, serve to point to the importance of fostering the machine boy, as in times of labour shortage, which are sure to come again, the maximum tonnage could still be broken if a sufficiency of machine boys was available. Especially is this so in view of the great progress which has been made during the past year in the use of small machines for economical and efficient stopping. The rates at present paid to hammer boys are, moreover absurd, in that they penalise efficiency in that class of work. It costs very considerably more for native wages per ton or fathom broken when hammer boys are drilling 48 inch than when they are drilling 36 inch, which is wrong in principle, as an increase in efficiency should show a corresponding decrease in the cost per unit of work. The anomaly is caused by the very high bonus paid on every inch drilled over 36 inch. Double rates are paid for such inches, although they are the easiest to drill. I understand that the rates paid to hammer boys are now under consideration, and that this Association will have an opportunity of expressing its views and putting forward its recommendations. In conjunction with the readjustment of hammer boy rates, I hope to see an increase in machine boy rates, sufficient to enable them to earn as much or more than equally efficient hammer boys, which would be in accord with a recommendation of your Council during the year. It is quite probable that a satisfactory method of putting machine boys on piece-work may yet be arrived at and adopted.

MILL APPRENTICES.

The question of the education of apprentices has received a great deal of attention. Although there are a great many youths who are anxious to enter into indentures, a large proportion of those who become apprenticed seem to take no interest in the excellent opportunity afforded them by the School of Mines to educate themselves in the theoretical side of their trades. The School of Mines is doing everything possible in the support and extension of reef evening classes, and managers should support the school by compelling apprentices to attend these classes as a *condition precedent* of the continuation of their indentures. It would also be advisable in future to insist that only those boys accepted as apprentices on mines who have passed standard six, except in a few special cases. The apathy and indifference to the educational facilities afforded is injurious in the extreme to the standing of the artisan of the future. The records of service which were instituted by this Association, and which at the start were looked upon with considerable disfavour by mine employees, have proved a great boon to numbers of miners who have unfortunately had to apply for compensation under the Miners' Phtthisis Act, in that they have afforded ready evidence to the Phtthisis Board of the service performed by applicants. In fact, had it not been for this system of service record it is doubtful whether many applicants for relief would have succeeded in establishing their claims at all.

PHTHISIS COMPENSATION.

A great many old miners, especially those who have followed development work continuously, have applied and taken compensation under the Act, which came into operation in August last. This has seriously reduced the supply of skilled labourers available, more particularly amongst those who are competent to carry on development operations, and good men for this class of work are now difficult to find. As I have already pointed out, since the dust evil has been so well met and overcome, the health of the miner as a class should be

very materially improved. It need be no secret to any one as a whole that each company should undertake its fair share of responsibility of training new men, others are with confidence in the rate of production, the demand for skilled labour will be increasing in excess of the supply. I think that every effort should be made to house and train the young married men of the country and that the following of this policy is likely to meet with the most success. I say young married men advisedly, because I am satisfied that there are ample numbers of these who are living in comparative poverty, and if they can be provided with housing accommodation, even of a most simple kind, a mining population will gradually grow up on these fields who will look upon the mines on which they have been trained as their homes, and who, on account of family connection, will find it more difficult to move about than does the single miner or the married miner with his family elsewhere. The young unmarried learner is too apt to consider himself fully competent when he has in reality only acquired the first rudiments of mining, and as soon as he obtains a blasting certificate, having no home ties he promptly swells the number of those who are continually on the move from mine to mine, and who contribute largely to the blame which is often wrongly placed on mine managers of the Rand and their underground officials for the numerous so-called changes in their employees' roll.

CHANGES ON THE MINES.

Those who discuss the subject of changes on the mines are very prone to assume that all the men, or nearly all, who leave the employ of any given mine each month are summarily dismissed, often unjustly. On the contrary, the majority of these changes are chiefly due to the men leaving of their own accord. The gambling element is very strong in the miner class, and owing to the contract system in vogue their wages from month to month vary considerably. There are always rumours prevalent that large cheques are easily made on some other mine and numbers, especially from among the moderately efficient and the inefficient men, are continually on the move in search of easy berths. A second reason is that in order to maintain discipline it is imperative that men should be dismissed for intoxication or absence from work without proper excuse, and, thirdly, it is often necessary to retrench labourers for economic reasons after the completion of construction or other work requiring temporary labour only. Work such as advance development, which is regulated largely by the supply of native labour, naturally fluctuates from time to time, and correspondingly calls for fewer or more white men. I feel sure that the average person who criticises knows little or nothing of the difficulties which the mine manager and other mine officials are obliged to meet daily, and I am equally sure that in the great majority of cases such difficulties are handled conscientiously and justly, with due regard to the interests of the employer as well as the employed. No one desires to have a settled class of efficient labourers more than the mine manager himself. Working costs on the mines of the Witwatersrand show an increase for the year of 8d. per ton milled over

1911 and 1912. The cost of the Rand in 1912 was 10s. 6d. per ton, and this increase was due to the increased cost of the coal and the increased cost of the labour. The Rand Mines, Ltd., in 1912, had a production of 1,000,000 tons of the eight in a day mode, and a total production of 1,000,000 tons, an increase in output of 100,000 tons and a 10 per cent. increase in output, which the N. & W. Rand Mines Corporation cannot but be proud of. During the past year we can, I hope, look forward to an improvement in this direction, and the leaders of the industry, the engineers and the mine managers, will continue to work together for the benefit of the general welfare.

MANAGERS AND MINES DEPARTMENT.

It will not be out of place here for me to say a few words concerning the relations between mine managers and the mines department. I think we all realise that in the Government Mining Engineer, Mr. R. N. Kizer, we have a sympathetic and practical official who is at all times ready to assist, so far as lies in his power, in the efforts we are making for the progress of the industry. As you are aware, the Mines and Works Act, 1911, gave powers to Inspectors of Mines to issue such instructions to mine managers as they, the inspectors, might consider desirable in the interests of the safety and health of mine employees, provided that an appeal might be made to the Government Mining Engineer against any such instruction. Nothing can be said against this section of the Act in principle, and provided it is not unduly exercised, and no doubt individual cases arise from time to time where prompt instructions from the inspectors are advisable and necessary for the safety of mine employees. Where, however, a radical departure from existing practice is concerned, affecting a large number of all the mines on these fields, I feel that it would be in the best interests of everyone concerned if the Chief Inspector could see his way to lay any proposed regulations before the Council of this Association for discussion before issue. With the adoption of this course, we, as a body, could work together with the Department for the common good, and I think we are entitled to this consideration. There are occasions when a conference between the Department and the mine managers would not only result in a more thorough understanding by the mine managers of the objects aimed at by the Department, but the opportunity which would be afforded to our Association of putting forward any practical suggestions which we might have, in the light of day to day experience, could only help in arriving at the best results. The attendance at the monthly meetings during the year has been bad, and I think that members should make it a practice to attend these meetings more regularly, and to bring forward any points they think may be of interest for the consideration of the Council. If we are to make this Association really useful in the fullest sense, we must each do all in his power to assist the President and Council in every way possible. Gentlemen, I now beg to move the adoption of your Council's report, and of the accompanying accounts for the year 1912.

ANSWERS TO CORRESPONDENTS.

"Anxious."—Nothing in the way of re-starting operations is likely for some months.

H.B.—The mill has been working on trial and regular runs for a period of about 2½ months.

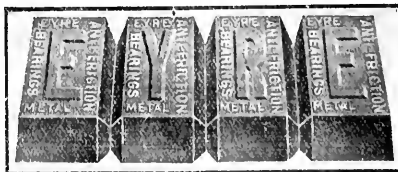
Investor (Lourenço Marques).—1. The prospects are good. Regular dividends should be paid in future. 2. The prospects have certainly improved, but it is impossible to forecast the future of this property.

J. Seabrooke.—Scheelite is calcium tungstate. We are unable to give the latest market prices for this mineral but wolfram (tungstate of iron and manganese) is quoted at £1 12s. per unit (the unit corresponding to 1 per cent.). Tungsten is used for toughening steel and at present there is a fairly large demand for ores containing this element.

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UNION MINERAL OUTPUT FOR JANUARY.

Returns Show an Increase of £86,931 on December.

The mineral output (including diamonds) for the Union for January was of the total value of £3,637,618, an increase of £86,931 over the output for December. The details are:—

Gold	£3,369,203
Silver	11,655
Coal	181,881
Base minerals	71,879

The output of diamonds is published half-yearly.

GOLD.

The following table shows the number of mines working in the various districts declaring gold, and the district outputs in January:—

District.	No. of Mines.	Stamps at work.	Tube at work.	Output, Fine Gold, Ozs.
Witwatersrand	59	9,540	278	757,693
Heidelberg	4	110	2	7,002
Klerksdorp	3	60	2	2,567
Ottoshoop	1	5	—	15
Barberton	12	202	3	6,949
Pilgrim's Rest	12	151	6	11,168
Pietersburg	2	25	—	531
Total for Transvaal ..	93	10,093	291	788,958
Totals for Union	93	10,093	291	788,958

PROGRESSIVE TOTALS.

(Since Commencement of Union).

	Transvaal.	Cape.	Natal.	Union of S.A.
1910.	£	£	£	£
June Dec.	19,098,807	316	9,786	19,108,909
Year 1911	35,041,485	310	7,216	35,049,011
Year 1912	38,086,250	162	5,276	38,091,688
1912.				
August	3,247,965	8	589	3,248,502
September	3,184,651	12	676	3,185,339
October	3,268,927	15	87	3,269,029
November	3,223,418	19	276	3,223,713
December	3,295,314	8	35	3,295,357
1913.				
January	3,369,193	10	—	3,369,203

COAL.

District.	No. of Collieries producing.	Tons mined.	Tons Coal sold.	Value per Ton. Pit's mouth, s. d.
Springs-Brakpan	5	63,376	46,204	5 0.97
Middelburg	16	356,838	312,931	4 3.30
Other areas	10	62,712	58,582	3 11.21
Transvaal	31	482,926	417,717	4 3.80
Cape	8	6,305	5,247	11 7.42
O.F.S.	5	59,504	47,633	5 4.62
Natal	21	343,834	254,709	5 11.48
Union of S.A.	65	892,569	725,306	—

COPPER AND TIN.

The following statement shows the output of copper and tin for January:—

	COPPER.	Output. Tons.	Shipments. £
Transvaal		397	3,641
Cape		1,535	23,430
Totals for Union		1,932	27,071
	TIN.	Output. Tons.	Shipments. £
Transvaal		266	34,517
Cape		—	—
Totals for Union		266	34,517

OTHER MINERALS.

Sales and shipments of minerals (other than gold, coal, copper, and tin):—

	Tons.	Values.
Asbestos	75	£1,305
Graphite	3	116
Magnesite	55	151
Lead	395	1,199
Lime	6,112	9,761
Flint	120	756
	Ozs.	
Silver in gold bullion	86,572	10,627
Silver in other minerals	8,690	1,028

Utilisation of Titaniferous Ores.

Many deposits of titaniferous iron ore, some of them very large, have attracted considerable attention as possible sources of iron, says the annual report of the U.S. Director of Mines. With present furnace practice, however, reduction of ores having more than a small percentage of titanium is difficult and expensive, and consequently such ores are refused by the furnaces. In its endeavour to bring about the utilisation of undeveloped mineral resources in the United States the Bureau of Mines is continuing on a small scale an investigation in relation to the treatment of titaniferous iron ores. This investigation was begun prior to the organisation of the bureau and seemed to merit completion. An examination was made in the summer of 1911 of a number of the more promising titaniferous iron ore deposits in the United States with a view to determining the distribution of the titanium in such ores. At least two of the examined deposits, Sanford Hill, in the Adirondack mountains, N.Y., and Iron Mountain, Wyo., are very large, and only their titanium content has prevented their utilisation. To determine the possibility of separating the magnetite from the ilmenite in this class of ores by magnetic concentration the composition of the grains of ore was studied by the microscopic methods used in studying metals and their alloys. The results of this study, which are to be presented in a bulletin, show that part of the titanium can be separated by magnetic concentration, but that so much of the titanium-bearing mineral, ilmenite, occurs within grains

of magnetite that the obtaining by magnetic concentration of concentrates carrying less than about 6 per cent. of titanium will be difficult if not impossible. Hence, magnetic concentration of titaniferous iron ores is not feasible unless furnace practice is so modified as to make practicable the smelting of concentrates carrying 6 to 7 per cent. titanium, or unless furnaces mix such concentrates with three or four parts of non-titaniferous ores. Because of the low phosphorus and sulphur content of the concentrates the latter alternative is already practicable.

Geduld Proprietary.

The Secretary writes:—I am directed to inform you that the reef has been cut in this Company's 3rd level 1,000 feet on the incline below the 2nd level. The complete assays give a value of 12.1 dwts. per ton over 48 inches, including 7 inches of waste.

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Engineering Notes and News.

MODERN CONVEYANCE: SHAKING CHUTES AND MOTORS.

Extract from Government Mining Engineer's Report, 31st December, 1911, page 105:—

"There is much to be done underground by the adoption of mechanical appliances, especially in the conveying of rock from the stope faces to the point of transportation towards the shafts. The cost of shovelling and tramping still continues to be one of the most expensive items on underground work, and has not received the attention of mine managers that it deserves."

THE conveyance of ore or waste in stopes by means of special machines has made rapid strides during the last few years. The use of shaking chutes operated by manual labour on this Field is well known, but it necessitates a considerable number of boys to shake the chute in addition to loading. It is now possible to use a simple form of machine for shaking the chutes and thus save the labour heretofore used for shaking, besides supervision and loading will be easier. At present chutes are used in stopes where the angle is flat to 30 degrees, but it will be found that chutes and motors could be used in stopes of even greater angle with economy and advantage. Many systems of shaking chute motors have been tried within the last few years, but

the majority have necessitated the use of special fixings. A new system has been recently installed in Europe, known as the "Flottmann Knee-Lever Motor," particulars of which we give herewith: Fig. 1 shows the Flottmann rolling chute in which the supports forming the roller faces are fixed to the side of the chute. The support is formed by a running shoe and it will be noticed that the rolling face is completely covered. The interior of the rolling face supports are provided with a channel in which project the roller shafts which can move freely therein; this allows that when changing the position of the chute the rollers need not be taken apart. Running plates form the guide rails for the wheels, the angle of the running plates is always adapted to the varying

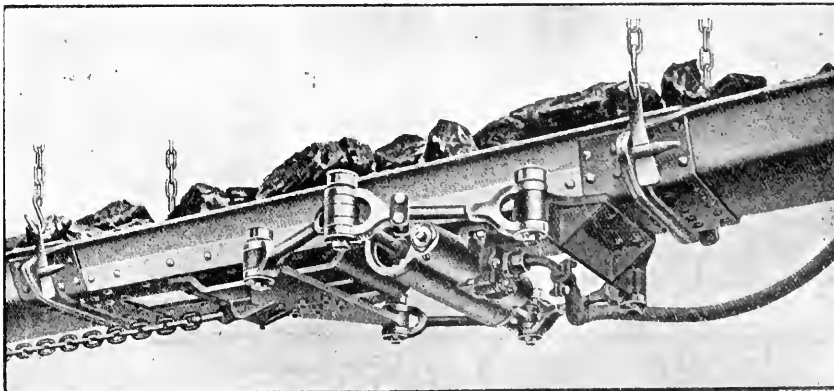


FIG. 3.—FLOTTMANN KNEE LEVER MOTOR WITH HANGING CHUTE.

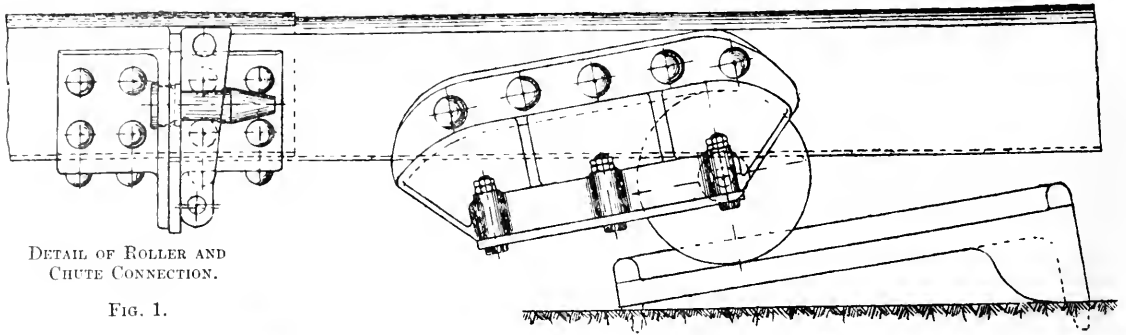


FIG. 1.—PART SECTION AND ELEVATION OF CHUTE.

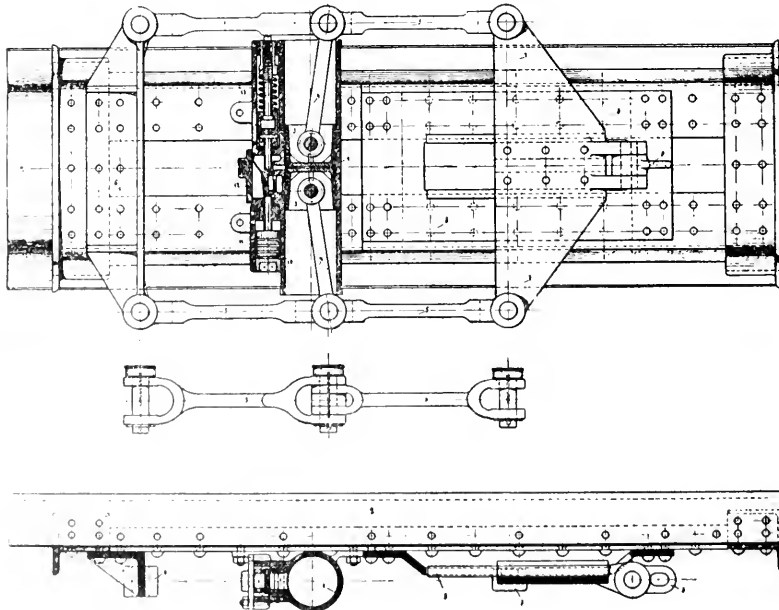


FIG. 2.—SECTION AND SECTIONAL PLAN OF KNEE LEVER MOTOR.

conditions so as to avoid unnecessary waste of power. An ingenious and simple form of universal motor is used, shewn in section, fig. 2; this motor though shewn fastened under the chute can be fixed at the side or above as required. This motor has the advantage that it can be fixed in any part of the chute length, either the lower, middle or upper end, the latter is preferable as then all the chute connections are in tension. The construction of the motor is clearly shown in fig. 2. The air cylinder (1) open at both ends, is fastened to a specially strengthened length of chute (2). Two equal pistons (3) which begin their stroke in the

chute is lifted up the running plates, towards the end of the stroke piston uncovers port (10) admitting air to valve piston (11) which moves "D" valve (12) to exhaust position. The whole chute then moves by gravity down running plates to its original position, shaking the material forward. The advantages of this motor and chute are as follows:—(1) As the motor is fastened to the chute a movement is obtained which is perfectly steady. (2) There is no pushing upwards of the chute. (3) By means of the toggle levers a great mechanical advantage is obtained with small cylinder diameter and low air consumption. (4) A very powerful

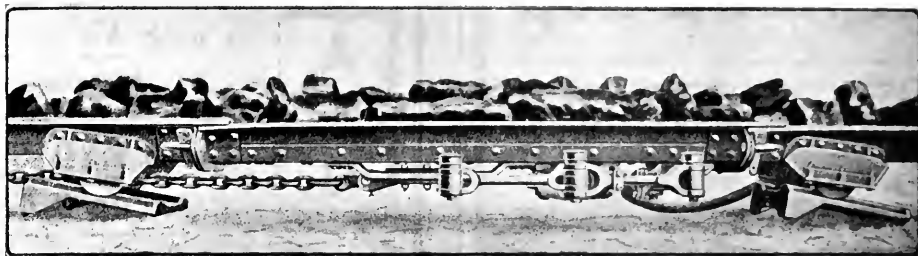


FIG. 4.—FLOTTMANN KNEE LEVER MOTOR WITH ROLLING CHUTE.

middle of the cylinder act by means of connecting rods on two pairs of Toggle levers (5). A slide valve governs the movements of the pistons. The Toggle levers are fastened at one end to the plate (6) which is rivetted to chute, while the other ends are fastened by means of bolts to the connecting plate (7) which slides in guide plate (8). In the end of connecting plate (7) is provided a ring and chain which is anchored to the footwall or any other convenient support. The action of the motor is as follows: The air enters between pistons, while toggle levers are straight, the outward movement of pistons bends the toggle levers and owing to end of traverse plate being anchored, the whole

motor with minimum weight is obtained. (5) The motor occupies very little space and therefore can be used in very narrow stopes. (6) Although motor is small, a chute 240ft. long, working perfectly flat, will transport ore 12 to 15ft. per minute. (7) It can be used in steep as well as flat stopes, as it can be easily transported on account of its small weight. (8) Material is never lifted more than 9in. when being shovelled into chute. (9) Waste can be handled at the same time as reef and deflected into packs as required. (10) Sorting can be done while ore is being transported. (12) The motor and chute can be used either as a HANGING or ROLLING chute (see figs. 3 and 4).

Preservation of Mine Timbers.

The United States Department of Agriculture have recently issued a bulletin (No. 107) dealing with the "Preservation of Mine Timbers," the author being E. W. Peters. It appears that several coal mining companies have installed plants to secure authentic data on the efficiency of various methods of preservation, from whom the Forest Service have obtained data. Before treatment, timber must be peeled and seasoned. There are two general methods of treatment, besides the brush treatment. The latter consists in applying two or three coats of hot creosote or other preservative—a method advisable in small operations. It has been found at the mines of the Philadelphia and Reading Coal and Iron Company that whereas untreated material failed within one to three years, brush-treated timber remained serviceable for from three to four years. The life of untreated peeled loblolly and short-leaf pine was from 10 to 15 per cent. greater than that of similar unpeeled material. In wet locations seasoned timber did not appear to outlast unseasoned material. Loblolly and short-leaf pine, brush-treated with coal-tar creosote and Avenarius carbolineum, proved to be from 50 to 100 per cent. more durable than untreated material, and more serviceable than untreated long-leaf pine, pitch pine, and red and black oak. Another process is known as the open-tank process, where the preservative is forced into the pores of the timber by atmospheric pressure. After seasoning, the wood structure becomes more porous, and in this condition is placed in a hot bath of preservative, the air in the wood being expelled by the heat. Successions of cooler immersions are then applied, which cause a contraction of the air and a condensation of moisture in the timber, leaving a vacuum for the entrance of the preservative. As a rule, dense wood is better treated by the application of artificial pressure. Pressure processes may be

employed for either full-cell or empty-cell treatment; the former leaves the treated portion of the wood completely filled with preservative, while the latter aims to inject the preservative as deep into the timber, but leave no free anti-septic in the wood cells. The oldest process of full-cell treatment with creosote is termed "Bethellising." A similar treatment with zinc-chloride solution is called "Burnettising." It is impossible as yet to ascertain the eventual saving from impregnation, since the timbers have not yet been in service sufficiently long, but even for the period since their installation they have proved more economical than untreated or brush-treated material. A small pressure plant, with a capacity of 750,000 cubic feet per year, may be erected at a cost of from 12,000 to 20,000 dollars.

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Automobile Notes.

Motorists will be glad to learn that the R.A.C., London, has joined with the Automobile Association and Motor Union and with the Society of Motor Manufacturers and Traders in the formation of a committee for a thorough investigation into the merits of benzol. If the investigations establish its character as a suitable substitute for petrol, and if the sources of supply can be shown to be equal to the consequent demand, the greatest service will have been rendered to the motoring public. The new Commission starts its enquiries immediately and will prosecute its work vigorously. It will be necessary to keep prominently in view the fact that any new industry, having for its object the displacement of petrol as a motor fuel, will have opposed to it one of the largest and most powerful commercial combinations that the world has seen, and that without very strong protection indeed it is more than likely to be strangled at its birth. It will be an easy matter for this powerful ring, with the weight of almost unlimited capital which it commands, to undersell for two or three years, or even longer if necessary, any new product that may be placed upon the market, and, when it has killed its rival, recoup itself again out of the pockets of the motoring community by putting the price of petrol higher again than ever. Should the investigations of the Commission prove the feasibility of producing a home-made fuel, equal in efficiency to petrol, and in sufficient quantities, there would seem to be a *prima facie* case for State intervention when the struggle, which is bound to come, ensues. There can be no doubt that solid fuel (coal) is giving place to its liquid competitor for power requirements, and that it is only a matter of time when its use in the Navy for propulsion, and in the Army for transport purposes, will become general. Surely this makes the

fuel question a national one. It becomes the duty of Parliament to see to it that we are not left dependent upon the tender mercies of a foreign commercial ring for our fuel supplies in the event of war.



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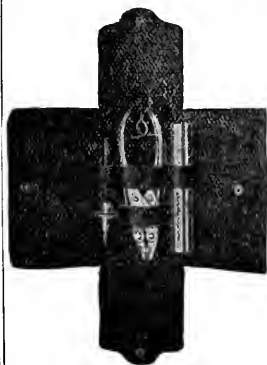
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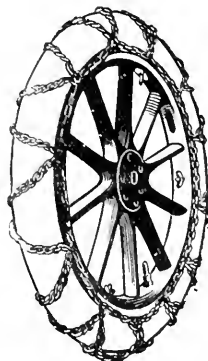
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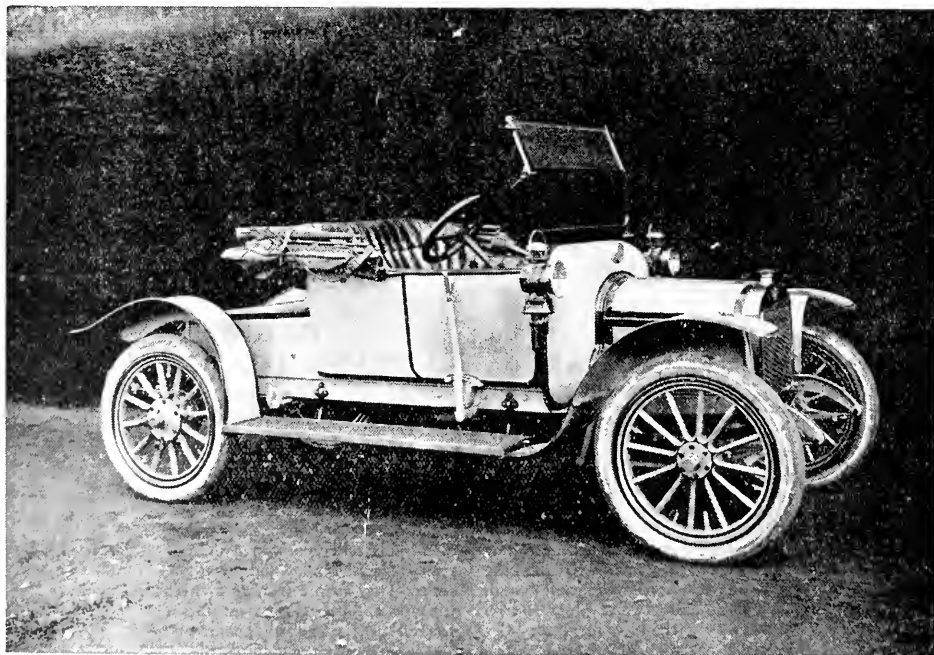
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The Select Committee of the House of Commons on Local Legislation has issued a special report, in which the following significant statement appears: "The time has arrived when an authority should be constituted to decide which roads should be the main roads of the country, and that the cost of their maintenance should be taken off the rates and put upon the taxes." For years past this doctrine has been preached, not only in England, but in this country as well, by those who are concerned generally with the traffic of the country. Lack of uniformity in method, overlapping of interest, and the maintenance of an unnecessarily large number of administrative bodies, each equipped with a full executive staff, all make for the fritting away of funds and the consequent deterioration of the roads. Local authorities are slow to recognise the necessity for change, and the necessity in this case has risen so suddenly through the extraordinary rapid development of the motor move-

ment, that many of them do not now realise what they are faced with. At long intervals a voice here and there has been raised in the Councils of our country urging the necessity, if on economic grounds only, of the establishment of a central authority to deal with the maintenance of all main roads, but parochial interests and local jealousies have hitherto proved too strong. It is to be hoped that in this country, at any rate, where the new Provincial Councils constituted under the Act of Union are giving evidence that they are live bodies, prepared to deal vigorously with all the work they can get, this question will now be forced to the front and a comprehensive scheme of main road construction and maintenance under a central authority thrashed out. There will be much profit accruing to the Province which, early in the field, equips itself with good roads to meet the coming influx of motoring visitors to this country.

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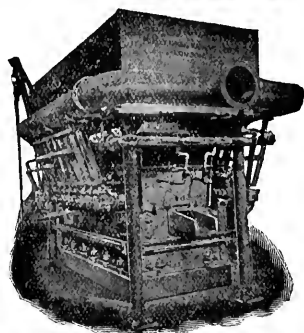
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Finance, Commerce, and Industries.

The following communication has been addressed by the Johannesburg Chamber of Commerce to the General Manager of Railways in regard to rates on goods consigned to Rhodesia and the Congo, viz.:—"I have the honour, by direction of my Chamber, to call attention to the anomalous position in which Johannesburg stands in connection with trade with the north. Upon the opening of the Zeerust-Mafeking connection with the Rhodesian Railways it was naturally expected that rates would be revised so as to allow of Johannesburg being given the advantage of its geographical position. On inquiry being made at your offices, however, it was ascertained that no 'distributing rates' could be quoted for distances further than Zeerust; and a comparison of rates from this centre and from the Cape ports show that the merchants of this town are especially and unduly handicapped. The respective distances from Bulawayo of towns competing for trade with the north are as follows:—Johannesburg to Bulawayo, 681 miles; Durban to Bulawayo, 1,165 miles; Port Elizabeth to Bulawayo, 1,201; East London to Bulawayo, 1,220; Capetown to Bulawayo, 1,362 miles. Yet notwithstanding these wide differences in mileage, it is found that rates from Johannesburg, after allowing for the original railage on goods from the coast (taking Durban or East London) are higher than the rate from any other centre. My Chamber can only interpret this schedule of rates as having been framed so that Johannesburg merchants, after adding railage already paid from the coast, would find it impossible to quote from stocks in competition with coast merchants. Against this position of affairs my Chamber must submit the strongest protest. It is well known that the Witwatersrand community are very

large contributors towards the public revenue of the Union and when a large sum of money has been applied to the linking up of the Zeerust and Rhodesian lines, it is inconceivable that those who so largely contributed to the cost of the line should be deprived of the benefits of the facilities thus created. If inquiry be made of the importers and consumers of the Rhodesian and Congo territories, it will be found that the large stocks kept in Johannesburg are peculiarly suitable to their needs. This is constantly being confirmed by letters received here. And not only are the stocks of specially suitable character, but, owing to their quantity and variety, purchasers would find prices favourable, provided reasonable and proportionately equitable railway rates are provided for. Thus the inequitable rates complained of are not only prejudicial to the trading community of Johannesburg, but they also hinder the development of the northern territories by restricting competition for their supplies and thus increasing their living and working costs. I am therefore to urge upon the Department that the schedule of rates complained of should be re-considered, and that the merchants of Johannesburg should be given equal opportunity with competitors elsewhere, and to this end the rates should be revised on the principles applying in the Union—treating Johannesburg as a 'distributing centre' for the north. My Chamber will be glad if you will be so good as to open negotiations on the subject with the Rhodesian authorities without delay as the present position is an intolerable one."

* * * *

The report of the Standard Bank of South Africa, Ltd., for the half-year ended December 31, 1912, **Standard Bank.** states that the directors declared a dividend for the half-year at the rate of 10 per cent. per annum, and a bonus of 4 per cent.; £15,000 had been placed to the investment reserve, £15,000 had been written down on premises, £10,000 had been placed to the reserve fund, £10,000 to the pensions fund, and £50,000 carried forward.

Jagersfontein Central.

The "Mining Investor," has the following:—Messrs. Barclay, Cox and Co., of Dashwood House, New Broad Street, E.C., have circularised the Continent with a view to placing shares in the Jacen Syndicate, Limited, which is to form a company called the Jagersfontein Central Diamond Mining Co., Limited, with a capital of £250,000. The statement is made that if the Jagersfontein Central is successfully floated the Jacen Syndicate profit will be "suffisant pour la distribution d'un dividende argent de £1 10s. et 8 actions Jagersfontein Central." The name Jagersfontein is a name to conjure with, and so is the title of the firm, which reminds one of two eminent banking firms. The Jagersfontein Central may be a great diamond mine, but if it is so good, how comes it that the diamond magnates have allowed it to slip through their hands?

A joint committee of the American Institute of Electrical Engineers and the American Society of Mechanical Engineers last month resolved to recommend to those Societies the use of the myriawatt as a unit of thermal or mechanical power, to be used exclusively in connection with boilers, producers, turbines and engines, in lieu of the term "boiler-horse-power," from which it is said to differ by only 2 per cent.

The monthly meeting of the Geological Society of South Africa was held at the Chamber of Mines, Johannesburg, last Monday, Mr. A. L. Hall presiding. There were a number of papers down for discussion, and some remarks were made upon Mr. P. A. Wagner's contribution upon "A Traverse Through the Northern Portion of the Mazoe District of Southern Rhodesia into Portuguese Territory," and upon Mr. A. von Dessauer's "Notes on a Composite Dyke from the Klipriversberg." The paper of the evening was that of Dr. E. T. Mellor on "Structural Features of the Western Witwatersrand," dealt with elsewhere in this issue.

Re Vacuum Filters.

With reference to recent advertisements by certain parties regarding the effect in the United States, and possibly elsewhere, of a decision given in the former territory on vacuum filters, the public are notified that we are advised that the situation in the Transvaal is dominated by the THOMPSON MASTER PATENTS, No. 1910 of 1899 and No. 175 of 1901, and that parties wishing to manufacture, sell, purchase or use vacuum filters of the swinging or submerged types, or pressure leaf filters of the totally enclosed type, should obtain a licence under the above patents.

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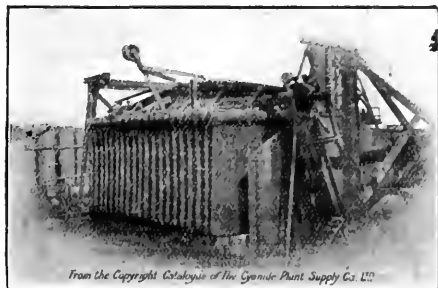
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NOTICE TO SHAREHOLDERS.

NOTICE IS HEREBY GIVEN, in terms of Section 32 of the Trust Deed, that the Ordinary General Meeting of Shareholders will be held in the Town Hall, Worcester, C.P., on WEDNESDAY, the 12th MARCH next, at 10 a.m., for the purpose of receiving Directors' Report, Balance Sheet, and Profit and Loss Account to 31st December last; for election of three Directors in place of Messrs. F. Lindenberg, Dr. D. de V. Hugo, and P. J. Rabie, who retire, but are eligible for re-election; for election of two Auditors; and for General Business.

The nominations must be sent in writing to the Secretary on or before the 25th February next.

The Share Register will be closed from the 4th to the 12th day of March inclusive.

By order,

M. S. FALCK,

Secretary.

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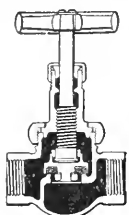
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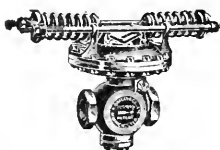
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Fig. 1409—Flanged.

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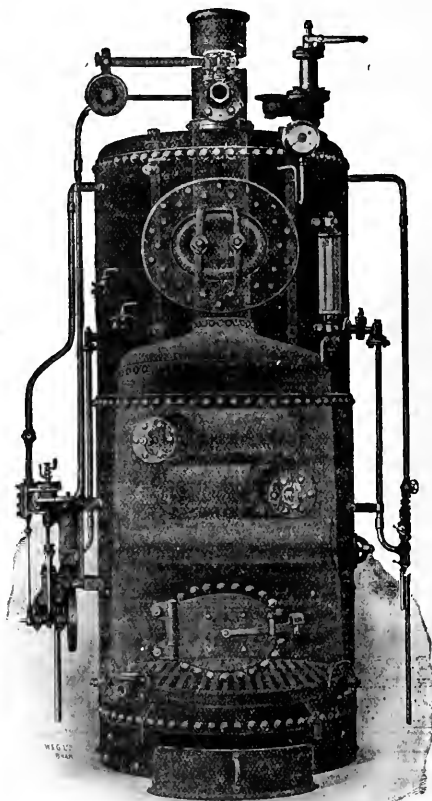
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DEPARTMENT OF MINES.

THE following Government Notice is published for general information.

FRED. BLUNDELL,

Under Secretary for Mines.

Office of the Minister of Mines, Pretoria.

No. 300.] [19th February, 1913.

Lease of Mineral Rights of portion of the farm WITPOORTJE No. 12, BOKSBURG DISTRICT, under sections *Forty-six* and *Fifty-two* (1) (b) of Act No. 35 of 1908, of the Transvaal.

NOTICE IS HEREBY GIVEN that the Government is prepared to receive applications for the lease of the exclusive right to mine precious metals on an area of about one thousand one hundred and eighty (1,180) claims, consisting of portion of the farm Witpoortje No. 12, Boksburg District, in the Province of the Transvaal.

The area is bounded on the north by the farm Rietfontein No. 11, on the east by the portion of Witpoortje No. 12, belonging to the South African Land and Exploration Company, Limited, on the south by the farm Witbok No. 149; and on the west by the portion of Witpoortje No. 13, belonging to the Van Dyk Proprietary Mines, Limited.

2. The lease shall be entered into with the Government, and shall be for a period terminating with the exhaustion of the payable precious metals in the area.

3. A plan of the ground may be seen at the Office of the Government Mining Engineer, New Law Courts, Johannesburg, and at the office of the High Commissioner of the Union of South Africa in London.

4. Every application shall be in writing, and must be in the hands of the Secretary for Mines, Pretoria, not later than the

31st DAY OF MAY, 1913,

and must be marked on the outside "Tender, Witpoortje Lease."

5. The application shall state whether the applicant proposes

(a) to form a company which will work the lease ground separately; or

(b) to form a company which will work the ground conjointly with adjoining ground; or

(c) to form a company which will hereafter amalgamate with any other company holding adjoining ground; or

(d) to form no new company, but to amalgamate immediately with adjoining ground.

The applicant must give full particulars and details of his proposals in each case.

Applications which contemplate the formation of a company shall be subject to the conditions of paragraphs 8 to 15 of this notice, and applications which contemplate no new company but an immediate amalgamation with adjoining ground shall be subject to the conditions of paragraphs 16 to 20, inclusive.

6. The lease shall contain the provisions in so far as they are applicable set forth in the lease entered into by the Government on the 27th January, 1910, and published in the *Transvaal Government Gazette* of the 11th February, 1910, under Government Notice No. 145 of 1910, and shall be subject to the provisions of the Precious and Base Metals Act, 1908, of the Transvaal (No. 35 of 1908), in so far as applicable, and shall contain such other terms and conditions as may be arranged between the Government and the lessee.

7. The Government does not bind itself to accept the highest or any offer.

CONDITIONS IN CASE OF THE FORMATION OF A NEW COMPANY.

8. It is estimated that, provided no unforeseen difficulties arise, and the ground is worked as an entirely independent proposition, a sum of at least four hundred thousand pounds (£400,000) sterling will be required for shaft sinking and preliminary development, and a further sum of at least three hundred and twenty thousand pounds (£320,000) sterling for bringing the property to the full producing stage.

In case the applicant proposes conjoint working or subsequent amalgamation with a company holding adjoining ground, he shall give full particulars of his estimates for such conjoint working or amalgamation and of his financial proposals.

9. Each applicant shall be accompanied by an undertaking from a banker of standing that he guarantees the applicant in a sum of forty thousand pounds (£40,000) sterling, which amount shall be payable by the banker to the Government on demand until the registration of the company. The said sum shall be forfeitable to the Government if the successful applicant shall fail to form a company as provided for in clause eleven of this notice.

10. Each applicant must satisfy the Government as to his ability to provide the necessary funds for shaft sinking and preliminary de-

velopment, and must indicate his general scheme of exploitation, including milling programme.

11. Within a period not exceeding two (2) months after acceptance of application, or such further period as the Minister of Mines may allow, the successful applicant shall form a company with limited liability, registered and having its head office in the Transvaal, such company shall be provided with at least the cash capital required for shaft sinking and preliminary development, and shall thereafter, when required by the Minister of Mines, furnish the additional cash capital needed to bring the property to the full producing stage.

12. At least one hundred thousand pounds (£100,000) sterling must be offered for subscription to persons resident in the Union of South Africa, but no person may apply for less than ten (10) or for more than two hundred (200) shares. The rules and conditions under which applications for shares are invited and the allotment thereof made shall be as directed by the Minister of Mines.

13. No vendors', promoters', or founders' shares shall be created, and no underwriting or other commission will be allowed.

14. No shares shall be issued at less than par, and in providing the capital required for shaft sinking and preliminary development all shares shall be issued at the same price.

15. The consideration to be quoted by the applicant as payable to the Government for the lease of the area shall take the form of a percentage of the annual profit (as defined in section four of the Mining Taxation Act, 1910), and the applicant must tender to pay the amount due under the sliding scale following hereunder, together with such additional percentage of that amount as he may be prepared to offer. The amount due to the Government under the said sliding scale is as follows:—

Percentage ratio of profit to recovery.	Percentage of profit payable to Government.	Percentage ratio of profit to recovery.	Percentage of profit payable to Government.
10	10	44	39.55
15	15	45	40.00
20	20	46	40.43
25	25	47	40.85
30	30	48	41.25
31	30.97	49	41.63
32	31.88	50	42.00
33	32.73	51	42.35
34	33.53	52	42.69
35	34.29	53	43.02
36	35.00	54	43.33
37	35.68	55	43.64
38	36.32	56	43.93
39	36.92	57	44.21
40	37.50	58	44.48
41	38.05	59	44.75
42	38.57	60	45.00
43	39.07	over 60	45

In the event of the ratio of profit to recovery between 10 and 60 per cent. being a fraction over any whole number given in the foregoing table, the corresponding percentage of profit payable to the Government shall be ascertained by simple proportional interpolation.

CONDITIONS IN CASE THE APPLICANT DOES NOT PROPOSE TO FORM A NEW COMPANY, BUT CONTEMPLATES IMMEDIATE AMALGAMATION WITH ADJOINING GROUND.

16. Each application shall be accompanied by an undertaking from a banker of standing that he guarantees the applicant in a sum of forty thousand pounds (£40,000) sterling, which amount shall be payable by the banker to the Government on demand until the Government is satisfied that the funds required for the adequate working of the proposed amalgamated property have been provided. The said sum shall be forfeitable to the Government if the successful applicant fails to provide the said funds within a period not exceeding two (2) months after the acceptance of the application.

17. In respect of any additional capital required for the exploitation of the area, no vendors', promoters', or founders' shares shall be created, and no underwriting or other commission will be allowed, except such as the Minister of Mines may permit.

18. The applicant shall state what proportion, if any, of such additional capital he is prepared to offer to the public for subscription, and on what terms, in accordance with the intention of paragraph 12 thereof.

19. The applicant must furnish full financial and technical particulars in regard to his proposed scheme of exploitation of the enlarged company, including milling programme.

20. The consideration to be quoted by the applicant as payable to the Government for the lease should take the form preferably of a percentage of the annual profit of the amalgamated property.

MARTIN BUDD,

Landing, Shipping and Forwarding Agent,

DELAGOA BAY.

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2¼" " " 165 " "

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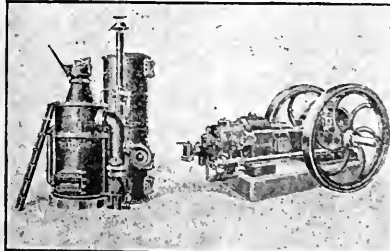
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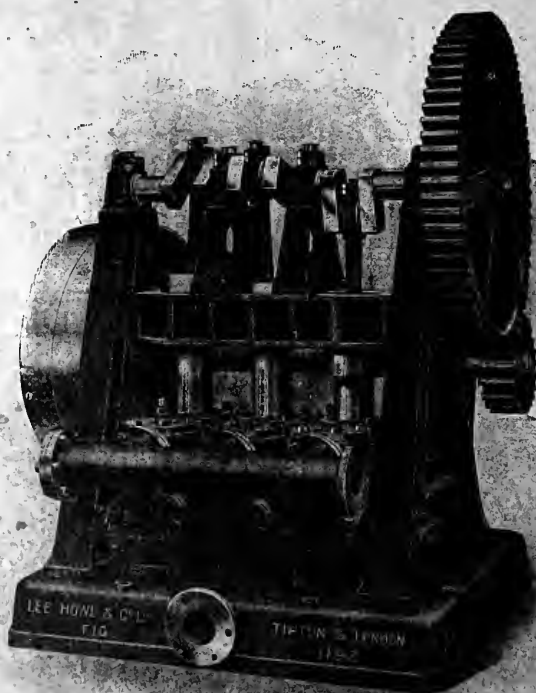
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